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ORIGINAL ARTICLES.

CHARLES ALBERT CALMETTE AND PIERRE PAUL ÉMILE ROUX.

By CLAUDE LILLINGSTON,
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The deaths of Calmette and Roux within a week of each other have left the Pasteur Institute more than ever a house of haunting but also inspiring memories. The biographies, recently published in the *Lancet* and *British Medical Journal*, have given us the main features of these two great men. Here it is more appropriate to focus attention on their personalities and on the contributions both made to our knowledge of tuberculosis.

The superficial differences in their personalities at once caught the eye. Calmette you instantly recognized as the cheery, capable man of the world. The organizer and hustling propagandist was brilliantly successful largely because, behind this serene exterior, there was an almost fanatical belief in his mission in life.

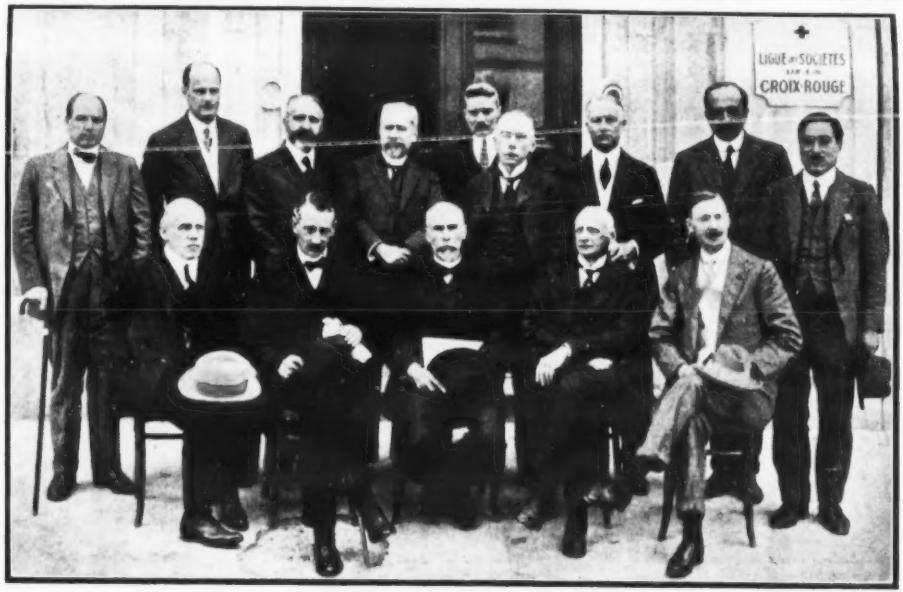
Roux, on the other hand, was outwardly the cold, gaunt ascetic, who haunted rather than attended meetings of the Academy of Medicine and other scientific bodies. He was the last man in the world whose back you would dare to slap, however intimately you may have worked with him. But behind the cold mask there was a passionate, almost apostolic fervour. Roux seemed to go on living simply because the work he was charged to do was not finished. Not that he was a mystic in worldly things. Few men have achieved such a dispassionate sense of hard truth; nebulous thought and nebulous speech were anathema to Roux.

Calmette was seventy, Roux eighty, when they died The latter

was a good illustration of the adage that if you wish to live long, you must have an incurable illness and know how to take care of yourself. Roux did not know how to take care of himself—the nuns at the Pasteur Institute did that for him. But he had an incurable illness right enough. For some thirty years pulmonary tuberculosis was smouldering when it was not actually ablaze. It would be interesting to compare Roux's work before and after he developed tubercle. To judge by the published records, most of his best work was done in the latter part of last century. But then he was associated with Pasteur, who not only inspired him, but also insisted on Roux being given the credit for his own work. After Pasteur's death we seldom find Roux's name attached to advances in medicine, but this was simply because his hatred of personal publicity was so strong in him. During the last thirty years he worked almost entirely behind the scenes, teaching, suggesting, criticizing, inspiring.

Roux investigated the properties of tuberculin with Nocard, but it is impossible to say how far these investigations have proved of permanent value. As in so many other fields, Roux was the scientific, unobtrusive layer of foundations on which other builders deposited their architectural prodigies for all the world to see. It was characteristic of the esteem in which Roux's work was held that the tuberculosis dispensary established in Lille by Calmette was christened the Émile Roux Dispensary. Roux might hate the limelight, but his followers could not always be induced to shut it off. This dispensary, by the way, was a pioneer institution, owing its existence to Calmette's happy combination of scientific perspicacity and administrative ability. Even in these early pre-war years in Lille, Calmette was busy trying to solve the tuberculosis problem by field work as much as by laboratory work. For, as in the case of hook-worm, he was quick to realize that public health measures and education in hygiene were essential if progress were to be made.

The history of BCG begins before the war with investigations to which Dr. Guérin contributed so great a part that Calmette insisted on the capital G being added to the title of the new vaccine. The war interrupted the BCG investigations for a time. They were resumed soon after it with results with which all are familiar. The ugly Lübeck disaster greatly distressed Calmette, who, shrewd man of the world that he was, knew full well that, if you keep on throwing mud, some of it will stick. Official investigations have shown that BCG was not to blame for a single death in Lübeck. Yet Germany has turned her back on BCG for ever and a day. Calmette was also keenly distressed by the attacks on BCG from English and American sources, but he remained to the last the gallant and courteous opponent, incapable of any personal or malicious counter-attack.



LE CONSEIL MÉDICAL DE LA LIGUE DES SOCIÉTÉS DE LA CROIX-ROUGE.

GENÈVE, JUILLET 1920.

Assis. de gauche à droite: Sir George Newman, K.C.B., médecin-chef du ministère de la Santé, Londres; Sir David Henderson, directeur général de la Ligue; Émile Roux, directeur de l'Institut Pasteur, Paris; Dr. Flexner, directeur des recherches médicales de l'Institut Rockefeller; Colonel Cummins, professor au R.A.M. College, Londres. *Debouts, de gauche à droite:* Dr. Strong, directeur de l'Office médical de la Ligue; Sir Walter Fletcher; Léon Bernard, professeur à l'Université de Paris; Albert Calmette, sous-directeur de l'Institut Pasteur, Paris; Dr. Bastianelli, pathologiste à l'Hôpital Polyclinique de Rome; Dr. Bordet, directeur de l'Institut Pasteur, Bruxelles; Dr. Madsen, de l'Institut sérothérapique, Copenhague; Dr. Castellani, de la Faculté de Médecine tropicale, Londres; Dr. Takasugi, de l'Université de Tokio.

No one can yet say what the fate of BCG will be, nor is it possible at present to gauge with even approximate accuracy the influence of Calmette's and Roux's work on public health and preventive medicine. But one thing is already perfectly clear: they have set wonderful standards of loyalty.

THE BRONTËS: A STUDY IN THE EPIDEMIOLOGY OF TUBERCULOSIS.

By ARTHUR SALUSBURY MACNALTY,
M.A., M.D. (OXON.), F.R.C.P. (LOND.).

The Rev. Patrick Brontë married Maria Branwell in 1812. Between the years 1813 and 1820 they had six children—five girls and one boy. Mrs. Brontë died of an internal cancer in September, 1821, when the family had been living at Haworth Parsonage for eighteen months. Every one of these children appears to have died of pulmonary tuberculosis, an example of contact infection which was in nowise remarkable in the early part of the nineteenth century, when the nature of the disease was imperfectly understood, its infectivity denied, and its treatment misdirected. The cause of these deaths is apparent, not only from the facts recorded in Mrs. Gaskell's "Life of Charlotte Brontë" and from the evidence of contemporary letters (see "The Brontës and their Circle" by Clement Shorter), but also from the certificates of death stating the nature of the last illness (except as regards Maria and Elizabeth) which have been recently extracted and commented upon by Dr. C. Mabel Edgerley, Honorary Secretary, Brontë Society.[1] The following table is based upon this evidence:

Name.	*Date of Birth.*	*Date of Death.*	*Assigned Cause of Death.*
Maria Brontë ...	1813	May 6, 1825	Consumption ("decline").
Elizabeth Brontë	1815	June 15, 1825	Consumption ("decline").
Charlotte Brontë	April 31, 1816	March 31, 1855	Phthisis — duration two months.
Patrick Branwell Brontë	1817	September 24, 1848	Chronic bronchitis; marasmus.
Emily Jane Brontë	1818	December 19, 1848	Consumption — duration two months.
Anne Brontë ...	1820	May 28, 1849	Phthisis.

In the case of P. B. Brontë the cause of death, given as "chronic bronchitis and marasmus," when taken into account with the descrip-

[1] Edgerley, C. M.: "Causes of Death of the Brontës," *Brit. Med. Journ.*, 1932 i. 619.

tion of him shortly before his death as having "a great gaunt forehead, the cheeks yellow and hollow, the mouth fallen, the thin white lips not trembling but shaking, the sunken eyes, once small, now glaring with the light of madness,"[1] makes it almost certainly a euphemism for pulmonary tuberculosis. Charlotte says that her brother "long had a shaken constitution." Before the end he was weaker, but was only confined to bed one single day.

It seems probable that the tuberculosis which destroyed one by one all the members of the gifted Brontë family was contracted primarily at Cowan Bridge School, the "Lowood" which Charlotte pilloried in "Jane Eyre." Cowan Bridge in Lancashire was a boarding school for the daughters of indigent clergymen, established in the year 1823. The fees charged were minimal, and the contributions of annual subscribers paid for the salaries of mistresses and other outgoings. The dietary was no doubt planned on economical lines and with the usual ignorance of the food-values desirable for the nutrition of growing girls which prevailed in those days, and discipline was ultra rigid, but Charlotte Brontë exaggerated the condition of affairs when she wrote: "Typhus fever decimated the school periodically, and consumption and scrofula, in every variety of form which bad air and water and bad, insufficient diet can generate, preyed on the ill-fated pupils."[2] The beds in the dormitories were certainly overcrowded. Two girls slept in one bed, and it is even possible that four girls did so in some instances.

In July, 1824, Mr. Brontë took his two eldest daughters, Maria and Elizabeth, aged ten and nine years respectively, to the school as pupils. They had only recently recovered from measles and whooping-cough, and were no fit subjects for this Spartan régime. In the following month he brought Charlotte, aged eight, and in November, Emily, aged six.

In the spring of 1825 an epidemic broke out in the school, which was called "low fever." The symptoms of this illness are not clearly described, but there were headache, fever, lassitude and aching pains in the limbs. The epidemic was certainly not typhus, which Charlotte believed it to be, for it only affected forty girls out of the seventy or eighty pupils at the school and was not of a severe type. One girl died at home "from after-effects." Mr. E. F. Benson suggests that the illness was a form of influenza, and this seems a reasonable view to take.[3] On the other hand, there is evidence that pulmonary tuberculosis was present in the school, and the whole outbreak may have been due to tuberculosis, which in badly administered

[1] Grundy, F. H.: "Pictures of the Past," pp. 90-92.

[2] Extract from private letter of Charlotte Brontë to Miss Wooler, her old friend and mistress.

[3] Benson, E. F.: "Charlotte Brontë." London, 1932, p. 21 *et seq.*

institutions not infrequently in the early nineteenth century spread from inmate to inmate until it flared up in epidemic form, the resistant members of the community passing through a mild febrile attack with recovery, the less resistant succumbing or acquiring tuberculosis in a latent form. An institutional outbreak of this character was recorded in the Report of the Principal Medical Officer of the Local Government Board for the year 1918-19 (p. 109).

At all events, Maria and Elizabeth contracted pulmonary tuberculosis at Cowan Bridge in the course of the epidemic. Maria had pleurisy at onset, which appears to have been seriously neglected. Her grave state of ill-health was ignored by a harsh assistant mistress. In February, 1825, she was so ill that Mr. Brontë was sent for. He took her home to Haworth, where she died on May 6. At the end of May it was recognized that Elizabeth was also suffering from pulmonary tuberculosis. She was brought home and died on June 15. Charlotte and Emily had come back to Haworth on June 1. Dr. Edgerley kindly informs me that they did not return to Cowan Bridge after the midsummer holidays, as Mrs. Gaskell believed, though their names were not taken off the books of the school till September, 1825. They must both have been ailing, probably with an initial tuberculous infection, for Mrs. Gaskell states that it was thought desirable to advise their removal from school, as it was evident that the damp situation of the house at Cowan Bridge did not suit their health.[1] The school was afterwards moved to better premises at Casterton.

The Brontës lived in close familial association at Haworth, and it is likely that Charlotte and Emily infected Patrick and Anne with tuberculosis. In the case of Patrick the disease was aggravated by his intemperate habits. He died in September, 1848, at the age of thirty-one. Emily, the mystic and the most gifted of the three sisters, achieved fame with "Wuthering Heights," and followed her brother to the grave in the following December, aged thirty. The words "two months" given on the death certificate may record the duration of her final illness, but her prolonged state of ill-health indicates that she had suffered from chronic pulmonary tuberculosis for many years. Anne was the next victim. After a dreary life of governessing and some literary success with her two novels, "Agnes Grey" and "The Tenant of Wildfell Hall," she died of "phthisis" at Scarborough on May 28, 1849. Charlotte was the most resistant of the family. Her disease was probably of the chronic fibrotic type, with slight exacerbations of activity from time to time—for instance, the attacks of fever she suffered in Brussels in 1843, and complaints of catarrhs, frequent influenza, and "low fever" at Haworth. She enjoyed the literary

[1] Gaskell, E. C.: "The Life of Charlotte Brontë." London: Dent and Co. Everyman Edition, 1908, p. 49.

success of "Jane Eyre," "Shirley" and "Villette," and under modern conditions of diagnosis and treatment her life might have been considerably prolonged. But she married the Rev. Arthur Bell Nicholls in 1854, and the strain of impending maternity broke down her resistance to tuberculosis. She died on March 31, 1855, whispering the words: "Oh, I am not going to die, am I? He will not separate us: we have been so happy."

The Rev. Patrick Brontë died on June 7, 1861, aged eighty-four. The certified cause of death was "Chronic bronchitis, dyspepsia, convulsions, duration nine hours."

The tragic tuberculous history of the Brontës would seem, then, to date from an infection acquired at Cowan Bridge School. How far such infection had its influence upon Charlotte's and Emily's genius is a theme for speculation which would carry one beyond the limits of this paper.

TUBERCULOSIS AND ALLERGIC DISEASES.[1]

By GEORGE W. BRAY,
M.B., M.R.C.P.,
Author of "Recent Advances in Allergy."

In spite of the fact that most evidence is against the possibility of any etiologic association between tuberculosis and such allergic diseases as asthma and hay-fever, the general impression amongst some doctors, and the laity especially, is that they are related. Practitioners frequently send asthmatic patients to the special clinics for investigation because they fear that they are tuberculous and require some special treatment in consequence; and one of the first queries of an anxious mother when she has been told that her child suffers from asthma is whether he is also consumptive. Such impressions are fallacious, but no doubt there is some excuse for them when one considers the following three observations: First, the wheezy dyspnœa of the chronic phthisic patient and the chronic asthmatic simulate each other, and in the more advanced cases of each great difficulty can be experienced clinically in differentiating the two unless the sputum is examined. Also in young patients, especially infants, enlargement of the tracheo-bronchial glands leads to a wheezy expiratory dyspnœa and the diagnosis of asthma when the case is really one of tuberculosis. Secondly, the recent method of treatment of asthma with tuberculin has tended to cause or support an erroneous view that the treatment is a specific one with the products of

[1] Records of Research (from the Asthma Clinics at the Hospital for Sick Children, Great Ormond Street, and Guy's Hospital, London).

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the causative bacillus, when in reality it is merely a non-specific one, making use of the protein substance in tuberculin just as the products of other organisms, whether stock or autogenous, peptone, milk or blood, are used on account of their protein content. Thirdly, Pirquet (1906), in coining the term "allergy," included the altered reaction capacity of the tuberculous subject when injected with tuberculin as well as the vaccinal and serum reactions. This idea of a hypersensitiveness to the products of the tubercle bacillus has been extended in recent years in an endeavour to explain many of the difficult problems associated with tuberculous infection and re-infection. At the moment the work is little more than in the experimental stage, in common with other aspects of bacterial allergy; and as hypersensitiveness to tuberculin relates merely to the type of the tuberculous process it does not concern us in the present discussion—that of any association between tuberculosis and the allergic diseases.

That asthma and tuberculosis have no etiologic association in general can be shown by statistics, by X-ray evidence, and by tuberculin reactions.

Statistical Evidence.

If we consider the incidence of tuberculosis in asthmatic patients and the incidence of allergic diseases in tuberculous patients, we are forced to conclude that the presence of active tuberculosis and asthma in the same patient is a rarity.

As to the incidence of tuberculosis in asthmatic patients: Reynier (1908) amongst 3,018 asthmatics found 4 with positive evidence of pulmonary tuberculosis; Giffin (1911) in 82 asthmatics found 3; Giffin and Sheldon (1914) in 373 asthmatics found 13; Duke (1925) amongst 500 allergic patients found 7; Klewitz (1928) in 423 asthmatics found 8; Rackemann and Colmes (1929) in 1,074 asthmatics found 13; Sterling (1930) in 350 asthmatics found 8; and Taub (1932) in 100 asthmatics found 8, including inactive cases. Such figures refer to all ages. In 2,000 children suffering from allergic diseases I have only found 12 with evidences of active tuberculosis. The majority of the cases referred to in these statistics were ambulant, and those that died generally succumbed to cardiac failure and not to the lung condition. In summary one may conclude that less than one asthmatic patient in a hundred gives positive evidence of active pulmonary tuberculosis.

As to the incidence of allergic diseases in tuberculous subjects: (*a*) *Asthma.*—Dluski found only 1 case of asthma amongst 2,450 sanatorium patients, and Schröder (1920) 30 cases of asthma amongst 4,716 tuberculous. As these figures refer to sanatorium patients, no doubt the tuberculosis is of an active or progressive type. The figures show that about 1 tuberculous case in each 200 also suffers from

asthma. (*b*) *Hay-fever.*—The only statistics on record are those of Lichtenstein (1932), who states that at the Chicago Municipal Sanatorium there are 10 cases a year of moderate or severe hay-fever out of about 1,000 tuberculous patients in residence, an incidence of about 1 per cent.

Radiologic Evidence.

Manges and Hawley (1927) found roentgenical evidence of tuberculosis in 18 per cent. of 157 patients with asthma. Manges (1929) found that in 300 cases of asthma at all ages there was X-ray evidence of tubercle in only 1 case during the first decade, 2 in the second, 2 in the third, 4 in the fourth, 11 in the fifth, and in 9 cases over 50 years. Harkavy and Hebald (1930) in 400 cases of asthma found that 10 per cent. had X-ray evidence of pulmonary tuberculous infection. Acton and Dharmendra (1933) studied 150 cases of asthma at all ages. Seventy-nine had clinical or radiologic evidence of chronic lung damage; in 15 of these cases there was evidence of tuberculosis—in 1 case early, in 4 advanced, and in 10 old and healed. In the remaining 71 allergic cases there was evidence of old healed tuberculosis in only 3. In children I (1930) published the X-ray findings in 300 consecutive cases of asthma commencing during the first decade. Excessive hilum shadows were present in 14 per cent., excessive mediastinal shadows in 2 per cent., and calcified glands in 2 per cent. Bronchial or mediastinal adenitis was present in 50 per cent. of the 75 cases of asthma in children studied by Lapage (1922), from which figures he concluded that most asthma in childhood was tuberculous. But in the X-rays of the chests of presumably normal children it is general to find some evidence of root or mediastinal shadows especially following exanthemata or whooping cough, or in other cases associated with nasopharyngeal infections. For this reason hilum shadows in the X-rays of the chests of children should only be classed as abnormal if excessive, and their presence, especially in the absence of other evidence, does not necessarily mean a tuberculous infection.

In summary, less than one case of asthma in six shows any roentgenic evidence that may be taken as indicative of a past or present tubercular infection in the lungs.

Tuberculin Reactions.

In 1930 I performed the Mantoux tuberculin reaction on 400 consecutive asthmatic children. It was found that 27 per cent. of the cases gave positive reactions. From the ages of 2 to 4 years 10 per cent. reacted positively; from 4 to 6 years, 21 per cent.; from 6 to 8 years, 27 per cent.; from 8 to 10 years, 40 per cent.; and from 10 to 12 years, 47 per cent. This curve is rising when the curve of the age-incidence of asthma in childhood is falling, so they are totally unrelated. The

children giving the positive reactions did not show any evidences of the spread of tuberculous disease, so the positive reactions must be interpreted as indicating merely the existence of a latent tuberculous focus. D'Arcy Hart, using the same technique at the same hospital, tested the reaction of 369 children aged from 3 to 10 years, all of whom were clinically non-tuberculous, and found positive reactions in 28 per cent. The figures are comparable to those of normal children published by Smith (1929), and for asthmatic children published by Baagöe (1928) and Lesné (1930).

Rongel (1913) obtained positive tuberculin reactions in 49 per cent. of 101 asthmatic children. Marfan (1920) obtained negative tuberculin reactions in three out of every four children with asthma under 2 years of age. Ruscher (1921) obtained 46 per cent. positive, Ancuna and Garrahan (1923) 28 per cent., and Zerbeno (1926) 43 per cent. Lavergne (1926) in 28 cases under 15 months of age did not obtain a single positive reaction. Reisman and Mason (1929) in 158 consecutive cases of asthma, aged from 8 months to 14 years, found 38·6 per cent. with positive intradermal reactions.

Acton and Dhaı mendra (1933) tested 93 asthmatics at all ages, and the Pirquet test was positive in 46 and negative in 47. In 60 of the cases there was chronic lung damage, and 35 were positive; of the remaining 33 only 11 gave positive reactions.

In summary, one may say that positive tuberculin reactions in asthmatics are no more frequent, and possibly less frequent, than in the normal population.

"Asthma" in Tuberculous Subjects.

In infants and young children a wheezing expiratory dyspnœa may be associated with enlarged tracheo bronchial glands. During the first year of life the child begins to wheeze, and this persists more or less without relief or remission, and the distress is much greater than one sees in the ordinary asthmatic child. This dyspnœa is not relieved by adrenaline subcutaneously. The Mantoux reaction and roentgenic evidence confirm the diagnosis of tuberculosis.

In adults, Fishberg (1932) states that "while we see now and then a case of asthma in the tuberculosis wards, they are extremely rare, which speaks against their etiologic association." "It appears that juvenile asthma has nothing to do with tuberculosis." He has studied the wheezy dyspnœal attacks that do occur in tuberculous subjects, and has labelled them "pseudo-asthmatic," and finds that they are usually due to pulmonary fibrosis with cardiac dilatation. These symptoms of "pseudo-asthma" are never seen in patients with exudative and progressive tuberculous lesions, but only in the intensely chronic fibroid cases. The dyspnœa is generally of a mechanical type occurring after exertion, laughing or eating, and bearing no relation to sensitivity.

In one patient in each two hundred of tuberculosis a true case of asthma is observed. In these cases it is probable that the tuberculous background plays a non-specific rôle similar to influenza, whooping cough, pneumonia, or bronchiectasis in other cases, which produce the necessary tissue damage for sensitization and asthma to appear. Great diversity of opinion ranges as to the nature of the sensitizing agent. In the cases that I have investigated the causative allergen has always been of an inhalant nature—either feathers, animal hair, pollen, or house dust. The removal of these irritants or a course of specific desensitizing injections has relieved the asthmatic attacks. In other words, the asthma has developed quite independently of the tuberculosis as such. In pollen-sensitive tuberculous patients there is a predisposition to hæmorrhage from excessive sneezing and coughing, and there is a pronounced loss of weight during the season. In these cases it is always advisable to give a series of preseasonal prophylactic inoculations. There appears to be some diffidence about inoculating tuberculous subjects for fear of febrile reactions, but the injection of a protein to which a patient is sensitized does not cause fever, so the specific treatment of hay-fever, with its relief from symptoms during the season, helps rather than hinders recovery from the tuberculous process. The same may be said of specific desensitization against inhalants causing asthma in tuberculous subjects. Non-specific agents should never be used on account of their pyrogenic tendency.

Others have suggested that the sensitizing agent causing asthmatic responses in tuberculous subjects is bacterial in nature, and opinion is divided as to whether tubercle bacillus alone is responsible, or whether symptoms are due to the secondary bacillary invaders that infect the cavities. Since asthmatic symptoms occur in less than 1 per cent. of tuberculous cases, the tubercle bacillus *per se* must be a poor sensitizing agent. In fact, many workers (Pinner, 1927; Krause, 1928) who have investigated this point suggest that tuberculoproteins are not capable of producing allergic manifestations.

On the other hand Malone (1931) collected 30 cases of pulmonary tuberculosis with cavitation associated with bronchial asthma, and from his studies he suggested that the sensitizing protein was not the tubercle bacillus, but other bacteria in the foci of mixed infection in the retained cavity secretions.

Finally, one word of warning is necessary. In the opening paragraphs the difficulty in differentiating between the wheezy dyspnœa of the chronic phthisic patient and the chronic asthmatic without examination of the sputum has been stressed. In this respect Moncrieff has drawn attention to the dangers of infants being infected by elderly grannies, governesses, or nurses, whose "asthma" cloaks a mildly active tuberculous process. Landouzy (1913) reported a classical

example where an "asthmatic" governess tended in succession three boys of healthy family who died almost at the same age of tuberculous meningitis. Therefore it is imperative that the sputum of all "asthmatic" adults should be examined for tubercle bacilli, and so exclude a real source of danger, especially to children.

General Conclusions.

One may summarize the association between tuberculosis and asthma as follows:

(i.) Only one asthmatic patient in a hundred gives any positive evidence of active tuberculosis.

(ii.) Only one patient with active tuberculosis in two hundred suffers from true asthma.

(iii.) When asthma does develop in a tuberculous subject the sensitizing agent is generally of an inhalant nature, and the asthma is relieved by its removal or by a course of specific desensitizing injections. In the rare cases in which the sensitizing agent is bacterial in nature it is more often a secondary invader than the tubercle bacillus.

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ARTIFICIAL LIGHT TREATMENT AT TUBERCULOSIS DISPENSARIES.

By G. LISSANT COX,
M.D.,
Central Tuberculosis Officer, Lancashire County Council.

In 1925 the Lancashire County Council decided to establish artificial light clinics at certain of their tuberculosis dispensaries to treat, within a reasonable distance of their homes, adults and children suffering from non-pulmonary tuberculosis. The first clinic was opened in 1925, and with the completion of the scheme there are now thirteen, all in tuberculosis dispensaries.

The equipment of each light clinic consists almost uniformly of two "Sunrae" carbon arcs for general irradiation, a Jesionek mercury vapour lamp for general or local treatment, and a Kromayer mercury vapour lamp with self-contained water-cooling apparatus for local treatment. Motor generators are installed where desirable.

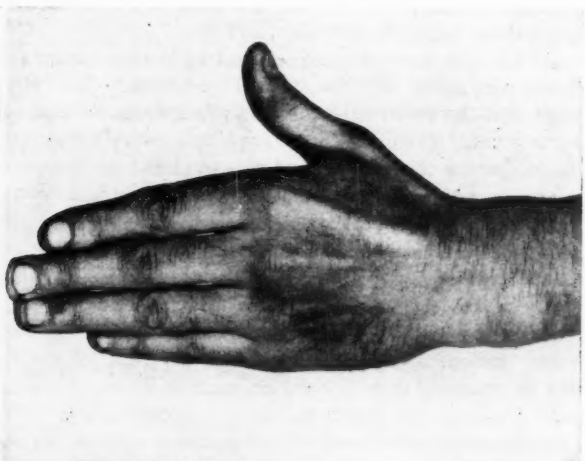
Light treatment is given by the dispensary staff; the tuberculosis officers prescribe and supervise the treatment; they are assisted by one or two of the tuberculosis health visitors of each dispensary area. At the clinics the medical staff also use adjuvant methods, such as curettage, spiking, incision, aspiration, and so on.

Patients for light treatment are selected by the consultant tuberculosis officers, who confer with the medical attendants. Generally it has been found that the patients themselves are anxious to undergo this form of treatment. The cases chosen are almost entirely those suffering from non-pulmonary tuberculosis and able to attend the dispensary.

The frequency of attendance depends upon many factors—*e.g.*, the ability of the patients, if working, to obtain permission to attend the dispensary, the convenience of travel, the kind of light equipment installed, the type of carbons used with the arc lamps, and the nature and severity of the lesion. As a general rule, patients attend two or three times per week, and for the convenience of those who are working, evening sessions are held. In 1932, 74 per cent. of the patients were able to continue their normal occupation during the course of treatment. Patients who are in necessitous circumstances have their rail or bus fares refunded, and of the patients treated during 1932 36 per cent. were so assisted.

There is no set scale of exposures for patients, each case having to be considered on its merits after a test has been made of the sensitivity of the skin. A slight erythema is aimed at, and pigmentation is allowed to develop. In general light baths the whole of the body is exposed, the front for half the time and the back for the other half.

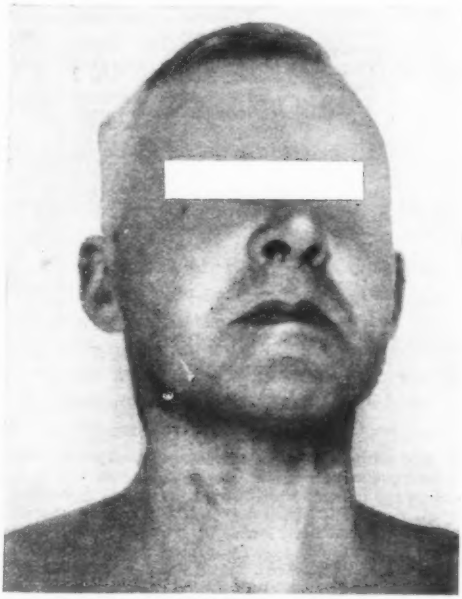
A.L. 1(*a*).—Patient E. H., aged 25, male. Lupus. Duration of disease prior to light treatment, 12 months. No previous treatment.



A.L. 1(*b*).—Same patient. Photograph taken 9-1-33 after 7 months' treatment with general carbon arc, local Kromayer and plaster. Pigmentation medium. Weight stationary.

[*Photographs taken at Eccles Dispensary.*]

A.L. 2(*a*).—Patient E. C., aged 50, male. Cervical adenitis. Duration of disease prior to light treatment, 6 months. Previous treatment, operation at a general hospital.



A.L. 2(*b*).—Same patient. Photograph taken 30 5-32 after 9 months' treatment with general carbon arc. Pigmentation deep. Weight gained, 6 lbs.

[*Photographs taken at Eccles Dispensary.*]

During treatment the eyes of the patients are protected by shades of red celastoid, which are made economically in the dispensary from large sheets of the material.

The duration of treatment has varied widely according to the lesion; taking several groups of cases in which the disease has become quiescent and apparently well in 1932, the average duration has been: Skin, 17·2 months; adenitis with abscess formation and skin involvement, 8·4 months; adenitis without softening, 8·1 months; bones, joints, and spine, 12·1 months; abdomen, 7·9 months; other non-pulmonary conditions, 12·5 months. For comparison with these figures, the average duration of the disease before the patients commenced light treatment was: skin, 109·7 months; adenitis with abscess formation and skin involvement, 20·5 months; adenitis without softening, 29·0 months; bones, joints, and spine, 47·6 months; abdomen, 13·8 months; other non-pulmonary conditions, 31·6 months. The average gain in weight of 284 patients who became quiescent and apparently well in 1932 was: Adults, 2 lbs.; children, 5·9 lbs. The degree of pigmentation was: Deep, 43; medium, 70; light, 112; nil, 59.

The following statement shows the number of patients with active disease treated during 1928-32, and the results of such treatment:

Lesion.	*Net Number of Patients who Completed Treatment.**	*Condition of Patients who Completed Treatment during 1928-32.*				*Number of Patients still under Treatment, 31-12-32.*
		Quiescent and Apparently Well.†	*Improved.*	*Stationary.*	*Worse.*	
Skin	265	212	40	9	4	166
Adenitis with abscess formation and skin involvement ..	572	529	31	12	—	101
Adenitis without softening	375	325	30	17	3	87
Bones, joints, spine	142	102	21	17	2	26
Abdomen	80	67	5	6	2	12
Other conditions ..	73	48	8	9	8	14
Total	1,507	1,283	135	70	19	406

* Excludes: (1) 58 patients who did not receive two months' treatment; (2) 357 patients who ceased light treatment prematurely (*e.g.*, removed, unwilling or unable to continue); and (3) 137 patients transferred to sanatoria or hospitals.

† The term "quiescent and apparently well" has been chosen to express the condition of a lesion which has been healed by artificial light treatment. By direction of the Ministry of Health no case of non-pulmonary tuberculosis is written off the tuberculosis register as "recovered" until three years have elapsed without any signs or symptoms of active disease.

In addition to the 1,507 active cases dealt with in the foregoing table, there were 122 non-pulmonary cases, whose condition was quiescent on commencing treatment. The object of treatment was to prevent a possible recurrence of active disease.

In order to record the progress made, photographs are taken of patients at the commencement of treatment, during the course of treatment, and at the end. Several photographs illustrating the results achieved are here inserted.

The results of treatment of cases of non-pulmonary tuberculosis at artificial light clinics established in thirteen of the existing tuberculosis dispensaries under the Lancashire County Council may be considered satisfactory, particularly for the groups (*a*) adenitis with abscess formation and skin involvement, and (*b*) lupus; both of these conditions are usually refractory to other forms of treatment. The results are also satisfactory from the economic point of view, because the average cost for light treatment per patient has been in the region of 4s. 6d. per week (inclusive of all standing charges and a proportion of staff salaries); many of the patients would otherwise have had to enter residential institutions with a greater cost on the county scheme. Furthermore, the majority of the patients have been able to continue their normal occupation.

CAVITY TREATMENT IN PULMONARY TUBERCULOSIS.

By EVELYN M. HOLMES,
M.B., CH.B. (MANC),
Tuberculosis Disease Diploma (Wales); Dorothy Temple Cross Research Fellow in Tuberculosis, 1932-3.

COLLAPSE-THERAPY as a means for the relief of the pulmonary tuberculosis case with cavities has now been accorded such world-wide recognition that no introduction to this subject is called for. Many problems, however, in relation to both the clinical and administrative side of the question remain unsolved, and there is an unfortunate lack of unanimity of approach to these matters. It is with the idea of laying down some of the fundamental principles involved and making suggestions which may serve as a basis of discussion of the various points that the following words have been written.

Rules and Regulations.

Rules and regulations for treatment are not easy to lay down nor to follow. The first question is: When should one institute active

measures of collapse-therapy? And the second question is: What measure should be adopted for each condition? Should one feel called upon to institute collapse-therapy in cases where the patient is comfortable and does not appear to be losing ground, even if there are cavities?

The answer to these inquiries is that collapse measures should be adopted in all cases of cavity which have been in existence for some time where there is reasonable hope of their being successful in bringing about collapse, provided there are no contra-indications. This is because the cavity case is a danger both to himself and the community, and because clinical experience has shown, and statistical records have proved, that the outlook of the patient with cavities collapsed is very considerably better than that of the untreated patient.

Contra-indications to Collapse-therapy.

Contra-indications to treatment by collapse would include:

1. Cases where treatment of some other condition—*e.g.*, empyema—warrants primary attention.

2. Cases where disease is so extensive and the patient's condition so weak that the likelihood of delaying a fatal issue is non-existent.

3. Cases where disease is so extensive that no local measures may be adopted which would not threaten to limit too seriously the respiratory area of the lung tissue, since collapse of cavities cannot be effected without collapse to some extent of neighbouring healthy functioning lung tissue.

4. Early cavities especially in children and young adults, since these tend to disappear spontaneously.

If no contra-indications exist, active measures should be adopted, and they should be adopted, except in a few instances further remarks will indicate, in a definite sequence from minor to major, beginning with that which is most easy to perform and gives rise to least interference with normal structures—*i.e.*, artificial pneumothorax. It is surprising how often one may obtain an artificial pneumothorax when X-ray signs suggest it is useless to try.

Artificial pneumothorax is now too widely known and used to call for detailed remarks except in regard to particular aspects.

The Selective Use of Pneumothorax for the Collapse of Cavities.

When artificial pneumothorax is found possible in cavity cases, it is necessary to watch very carefully that a contra-selective collapse does not take place. An artificial pneumothorax which appears contra-selective at first may alter and become selective with the giving-way of adhesions. After full pressure has been maintained for some time it should be reduced. The healthy part of the lung should expand

somewhat under this reduced pressure, and the pneumothorax thereby become selective unless adhesions are holding out the cavities. Such adhesions may be cauterized, but they should not be cauterized until a fair trial of simple artificial pneumothorax has failed to effect collapse, and much care should be exercised in the selection of cases suitable for cautery. The risk of complications is too great where the bands are broad where lung tissue may be included in them. Occasionally broad bands may be treated in stages. Where adhesions hold out a cavity, making the pneumothorax contra-selective, even where clinical improvement has occurred otherwise to a satisfactory extent, cauterization should be adopted provided there are no contra-indications on other grounds.

Bilateral Artificial Pneumothorax.

Artificial pneumothorax in bilateral cases applied *simultaneously* is most successful where conditions are otherwise suited to this treatment. Except for a little leniency in the matter of pressure, each lung should be treated singly as though it alone were at fault. That the collapse is of the type desired requires the particular care which has already been noted as necessary in unilateral cases, only now it is of even greater moment than before. Hence, if adhesions are holding out a cavity, cauterization must be adopted if it is practicable. It is merely necessary to increase the pressure a little prior to the operation, at the same time reducing that on the contra-lateral side. If adhesions are present on both sides, they may be dealt with one after the other, each as individual conditions.

Alternative Courses.

Where artificial pneumothorax is found not possible by reason of inoperable synechiæ—

(i.) *A phrenic exairesis may help to close a basal cavity ;*
(ii.) *An apicolysis with plugging may help to close an apical cavity ;* or
(iii.) *A thoracoplasty may be performed.*

Phrenic Avulsion.

This operation has only a limited field. It should not be performed except for specific reasons. Its unconditional use in some clinics has served no useful purpose. It has been shown to have little value as a supplement to artificial pneumothorax where that operation alone can succeed, and it should never be used in place of it in such circumstances. It may prove useful when an artificial pneumothorax has to be given up on account of adhesions, or later to reduce the number of "refills"; but Gravesen has shown that it is wisest to refrain from employing operations on the phrenic nerve for other than basal cases

by reason of the fact that the basal part of the lung, which is the part most affected by phrenic nerve paralysis, is the part required for function in apical disease, and therefore the full function should not be wantonly destroyed.

Apicolysis with Plugging.

Freeing of the apex from the dome of the thorax has been combined with the operation of thoracoplasty by many surgeons. Effected singly with plugging by transplanted fat or by Baer's Paraffin Mixture, apicolysis has been attempted from time to time but without great success, either in effecting collapse to the extent required or in the absence of unpleasant sequelæ.

Despite this, however, Gravesen has recently given this operation a wider trial in selected cases—*i.e.*, in cases with apical cavitation, impossible of compression by artificial pneumothorax on account of adhesions and possessing some contra-indication to the major operation of thoracoplasty; and by certain improvements in technique and a careful selection of cases, he has obtained a certain measure of success with this operation. For the patient, the operation is a relatively simple one and may be adopted when illness, debility, age or condition demand that, while doing all one can in the way of treatment, restriction should be placed on active measures. It must be remembered, however, that, although for the patient the operation is simpler and causes a great deal less shock than the operation of thoracoplasty, it is at the same time more difficult for the surgeon to perform and holds a greater risk of complications. The manipulation must be very gentle and cautious. It is an operation which it is possible a trained tuberculosis physician may perform better than an ordinary surgeon. The operation should now be accepted as a recognized procedure for the type of case indicated above.

Thoracoplasty.

Thoracoplasty is the operation of choice where artificial pneumothorax has failed, where cavities are apical and extend too low for treatment by apicolysis, or basal and extend too high for successful treatment by phrenic nerve paralysis, and where the contra-lateral lung is healthy or so slightly affected and in such good condition as to be able to tolerate well the added functional call which will devolve upon it.

Thoracoplasty should not be considered unless or until simpler measures have been tried and failed.

Thoracoplasty should not be accompanied by or preceded by phrenic avulsion unless there is disease in the basal part.

It should be partial in preference to complete in all cases where this limited operation might seem as if it would answer the problem.

Where a thoracoplasty is partial, it may be performed with more disease on the contra-lateral side than would permit a complete thoraco-

plasty to be undertaken because of the continued function of the lower part.

Where a thoracoplasty is partial it may be performed when there is definite apical disease in the contra-lateral lung with a view to active selective collapse measures being undertaken upon this side when the patient has picked up from the operation of thoracoplasty on the one side. It has been possible to perform partial thoracoplasty on both sides, and with success.

These are briefly the measures to be adopted. Any combination of methods may be employed on one or both sides which may answer the individual problem, and, as experience develops, we find ourselves able to do ever more and more for patients with these lesions. It still remains to effect measures of diagnosis and treatment which will bring about a reduction in the numbers of these cases in existence. The problem of the future is going to be, not the treatment but the prevention of cavity formation, in particular a wider recognition of pleural conditions as at least in all probability tuberculous, in the majority of cases.

The writing of this paper was suggested by a visit to Vejlefjord Sanatorium, and the principles enunciated are those which are in force at that sanatorium. Their practice has effected a 100 per cent. improvement in the results of treatment of Stadium III. cases within recent years, and this figure is steadily rising.

I wish to thank the Medical Research Council for facilitating my studies on this work during my year as a Dorothy Temple Cross Research Fellow in Tuberculosis, and to thank Dr. Gravesen for his kindness.

[Given in abstract before the Tuberculosis Association, October 28, 1933, on the occasion of their meeting for the Discussion on Cavities.]

TUBERCULOSIS IN GENERAL PRACTICE.

By ERNEST WARD,
M.D. (CAMB.), F R.C.S. (ENG.),
Hon. Secretary, Joint Tuberculosis Council.

We may best consider the question of tuberculosis in general practice as follows: (1) The position of the practitioner in the tuberculosis campaign; (2) Tuberculosis as it presents itself to him; (3) Treatment in general practice; (4) Methods by which the practitioner's work

might be rendered more efficient. Lastly, certain special aspects of the problem will be mentioned.

(1) In our fight against tuberculosis the general practitioner occupies the front line; of all positions his is the most arduous and the most easily assailed. From among the very varied derangements of health which present themselves to him for treatment he must be the first to suspect tuberculosis. If he is a busy man he will see one case of pulmonary tuberculosis each month and a case of non-pulmonary disease once a year; though the number of patients in whose case the possibility of tuberculosis must be reviewed, together with other possibilities, is naturally larger. Under such circumstances attacks on his ability and alertness are easily made, and it is small wonder that they have provided the *Spectator* with an attractive correspondence of many weeks' duration.

(2) To the practitioner tuberculosis may present itself in a widely varied guise. Perhaps the commonest form in which it is encountered in practice is the one which is also easiest to diagnose. For example: A girl of twenty-four has been ailing for four weeks, with a cough, malaise, lassitude, and anorexia, but has been unwilling to see a doctor—"did not feel ill enough." Now, at last, her relatives have overcome her dislikes and there in the surgery she sits. Examination reveals physical signs, and a radiogram shows rather unexpectedly extensive disease of the lungs.

The almost equally common "influenzal" onset presents more difficulties. An epidemic may prevail, or it may not, for influenza is diagnosed all the year round, whether epidemic or not. The patient attacked has malaise, back pains, a cough and perhaps a sore throat, but the disease does not clear up in the usual few days, or symptoms only partially disappear, or a relapse takes place, and sooner or later tuberculosis becomes manifest. Next come the cases of hæmoptysis; in these the doctor will invariably consider tuberculosis as a possible cause, but may be persuaded by the patient or his friends to seek and perhaps discover an origin in the pharynx or gums. The effortless hæmoptysis of from one to two ounces under forty-five years should be easy to diagnose, but over forty-five the position is different, and it is indeed probable that after this age arterio-sclerosis or something other than tuberculosis are commoner causes of hæmoptysis. Such are the usual forms in which tuberculosis presents itself, but there are many others which space does not allow me to describe. Chronic cough, chronic emaciation, persistent slight pyrexia, delayed recovery from one of the exanthemata, debility, languor, or neurasthenia may all give rise to a just suspicion.

(3) Once having diagnosed tuberculosis with or without expert assistance, unless the interests of a good patient are concerned, the

practitioner will usually hand over the case to the official tuberculosis service and cease seriously to interest himself in its welfare. This should not be, for with the general practitioner rests the day-to-day guidance and treatment when the patient is not in an institution, and he moreover, more than anyone else, can prevent the spread of infection; but the zeal and sometimes the lack of tact and *savoir faire* of the tuberculosis service have created the situation, and time will show whether the position can be retrieved. It certainly will not alter before we realize that change is necessary if our campaign is to succeed.

Apart from advice, the practitioner is compelled by moral pressure to give drugs. Some will confine themselves to time-honoured symptomatic remedies—tonics, cough mixtures, and the like; others will administer varieties of special remedies, perhaps commencing with the latest advertised. In every walk of life there are exceptional men, but it is my experience that gold treatment and artificial pneumothorax inductions or refills are best avoided by the general practitioner. The application of these remedies requires more experience than is afforded by practice, and most men realize this, and realize also that their administration is unlikely to bring credit, and may very well bring discredit. All too often it is the mercenary-minded and not too busy practitioner who employs these special remedies.

(4) Now, in what ways could general practice work be improved and made more helpful in the eradication of tuberculosis? First of all the practitioner should realize how essential to present-day chest diagnosis is the radiogram. He should familiarize himself with the interpretation of films and secure a picture of every doubtful chest case and of every pleurisy before giving his patient a clean bill of health. Then the tuberculosis officer might sometimes be consulted more promptly. Today in many areas, where the tuberculosis officer has succeeded in inspiring confidence, this is already done. But I do not think that this applies to the majority of districts, and it would be difficult to allot the blame. The general practitioner may be at fault or the tuberculosis officer, or the tuberculosis officer's administrative chief, who is striving to eliminate the personality of his staff when it is upon personality in medicine that successful treatment so much depends. Or, indeed, it may be the system itself which is to blame.

In addition to these two points the value of sputum examination might be better realized, though this is far more widely known than the value of a radiogram. And the practitioner should not delay too long in making up his mind about a case which at first sight calls for hesitation. If he cannot make up his mind alone, then a second or a third opinion should be obtained without delay.

Another matter that might be improved is the method of explaining

the position to the patient. Frankness clears the air, and anything can be told to the patient or friends *if it is told the right way*. It is unfortunate that the younger men who are most inclined to be frank have often not yet learned how to put their case.

(5) There are several special problems that might be considered if space allowed. Perhaps the most important is contact examination. Early diagnosis and contact examination are hackneyed slogans in the tuberculosis world. Yet early diagnosis is a very complex and many-sided problem to which this whole article might well have been devoted, and contact examination as now carried out is of doubtful and certainly limited utility, as indeed Professor Picken has ably emphasized.

Here is a typical case for consideration. I see a married woman with a family and inspect the children; all are well and healthy. Within two years the patient dies. Twelve years later I am again called in to see a daughter, now aged twenty-seven, with acute tuberculosis, who dies within three months of my first visit.

Another married woman whose children were well when she was first seen recovers, but is still seen annually. The children are not seen again; during school age they may, rarely, be kept at home to see me, but when they start work this is no longer feasible. Ten years after my first visit a daughter of twenty-two develops pleurisy and pyrexia, and a radiogram reveals extensive right-sided disease. Now, could these patients have been discovered much earlier had I re-examined all these contacts every three months for very many years? And if this re-examination was carried out on a large scale it is my belief that a large number of patients would have been labelled tuberculous, plucked from their homes and sent to institutions, when, had they been left alone, they would never have presented a clinically diagnosable tuberculosis.

The practitioner could aid us in discovering sources of infection if he made a habit of considering the families of his tuberculous patients, speculating whence came the infection, and persuading likely sources to be further examined and radiographed. This would be really useful work and need not indeed be strictly limited to families known to be tuberculous. Moreover, the labour need not be oppressive; one such reference each three months would be ample. But before this is possible many changes will be necessary, alas! The practitioner has been and still remains the spearhead of our attack and the chief rampart of our defence.

ASSOCIATIONS AND INSTITUTIONS.

THE LORD MAYOR TRELOAR CRIPPLES' HOSPITAL, ALTON: THE NEW WARDS.[1]

We are indebted to Sir Henry Gauvain, M.D., M.C., F.R.C.S., Medical Superintendent of the Lord Mayor Treloar Cripples' Hospital, for the following description of developments at Alton.

The new wards of the Lord Mayor Treloar open-air hospital for crippled children have now been erected, and a brief description of the buildings may be of some interest. They comprise five similar ward units of sixty beds each. Each ward unit is divided into two large wards, each containing twenty-four beds, two small four-bedded wards, and four cubicles. The small wards are very suitable for special or post-operative cases or for children who for any reason should be nursed apart or under special conditions—*i.e.*, in a warmer atmosphere. The number of patients in each ward unit has been selected both for convenience in nursing and staffing and also to comply with the Board of Education requirements for teaching. The centre of each unit is the Sister's office, which enables efficient supervision to be maintained, patients both in the wards and on the terrace outside being all under easy observation. Natural cross-ventilation is adopted, the south side being provided in its whole length with folding glazed doors with Esavian fittings. These doors are kept open except in the most inclement weather or while children are being washed. For its psychological value each ward is provided with a cheery open fireplace with tiled surround. The main heating is, however, by panels beneath a terrazzo surround. Dampness is thus excluded and the comfort of patients enhanced. There is no need for a child in a properly designed open-air hospital to suffer from undue cold or damp, though access to cold and moving air is, of course, essential. The ward walls to a height of 4 feet are terrazzo, while the centre of the ward is floored with teak blocks. Illumination is provided by concealed ceiling lights, which may be regulated at will, and are so placed as to cause no glare in the patients' eyes. The whole south side of the ward being open, beds are wheeled on to the adjacent terrace with minimum labour. This terrace is 25 feet wide and approximately 1,000 feet long, and in front of the wards glazed to a depth of 10 feet with a sliding-roof of wired vita-glass, which, by simple gearing, is readily raised or lowered. The terrace is paved with green artificial stone blocks which avoid glare. From the centre of the terrace are steps to the ground and a specially constructed ramp each side for ambulant children. The sanitary and other annexes to each ward have been specially designed to meet our peculiar needs, and behind the wards is a paved covered way or cloister, which permits ready access to the various departments of the hospital. The

[1] We are indebted to the Editor of the *Lancet* for the provision of the blocks from which the accompanying illustrations have been prepared.—Ed. B.J T.

patients are transported in comfortable electric trolleys. Beneath the cloisters is a lofty subway, conveying pipes, cables, etc., which are easily and conveniently reached in case of breakdown. Owing to

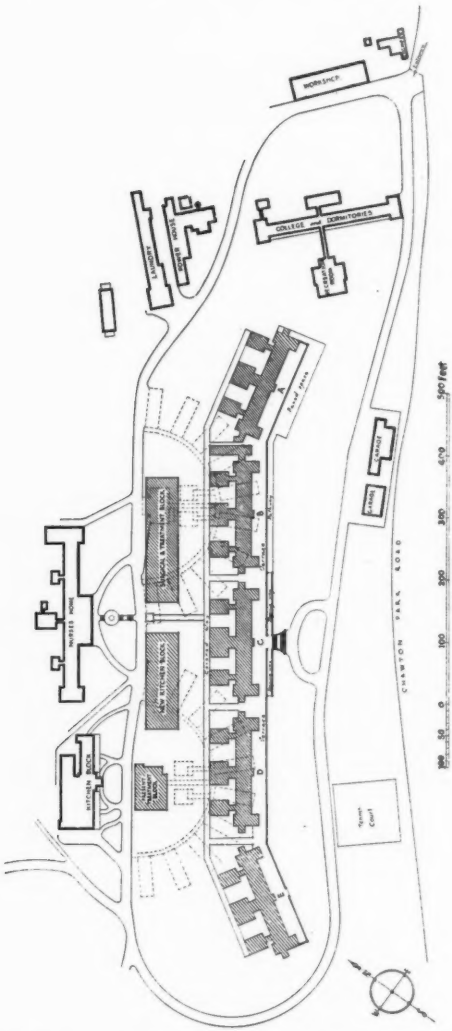


FIG. 1.—LAY-OUT PLAN OF THE NEW TRELOAR CRIPPLES' HOSPITAL.
The dotted lines indicate the position of the wards in the original hospital.

the fall of the ground to the east, A and B wards are considerably above the ground, and space under them is utilized for other purposes. Beneath B is a large open-air but covered winter playground for

ambulant children, which is irradiated with radiant heat and ultra-violet lamps. The effect is delightful. Beneath A block are lobby and schoolrooms, and dining-room with servery for ambulant patients,

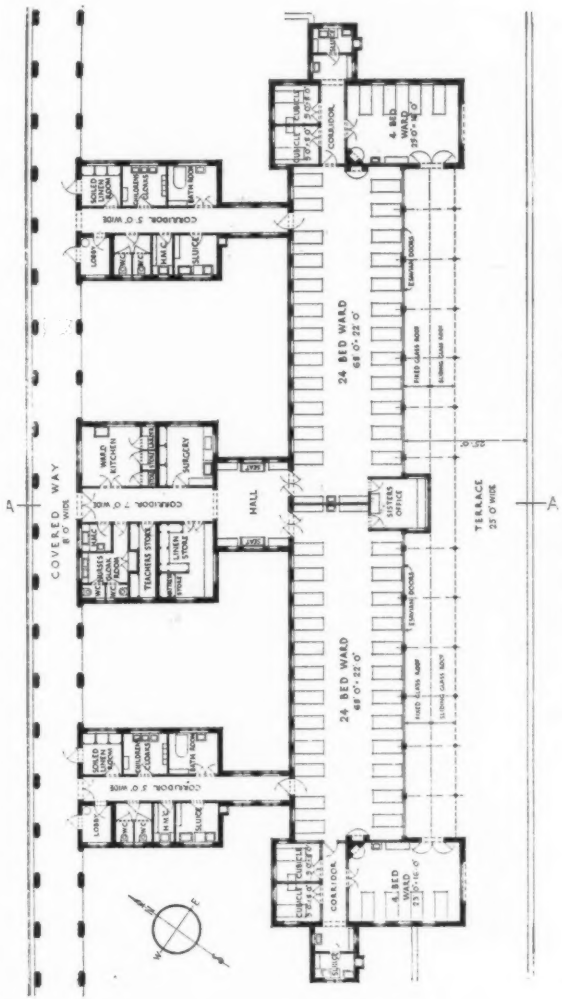


FIG. 2.—PLAN OF WARD UNIT FOR SIXTY BEDS.

preparation-room and office for teachers, and an extensive and very fully-equipped light department with necessary annexes. The architect is Mr. H. B. Smart, F.R.I.B.A.

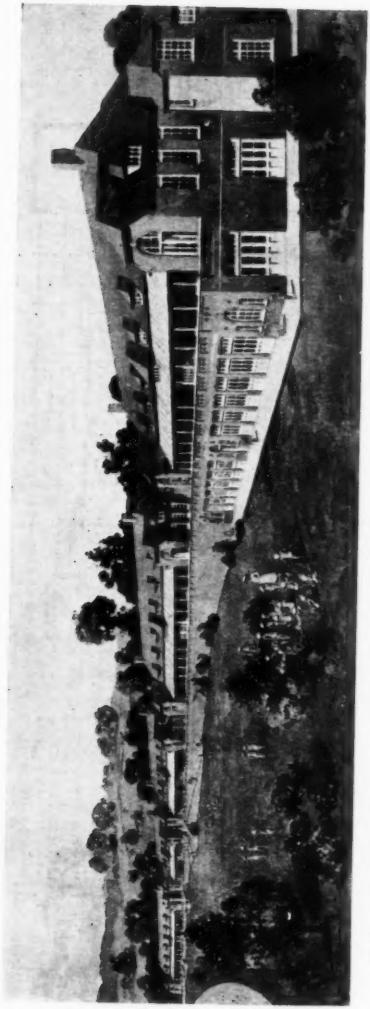


FIG. 3.—PERSPECTIVE VIEW OF THE COMPLETED TRELOAR CRIPPLES HOSPITAL AT ALTON.

NOTICES OF BOOKS.

THE ERADICATION OF BOVINE TUBERCULOSIS.

Dr Jordan, in his recently issued monograph, has performed a most valuable service in showing the possibilities of an eradication scheme carried out under ordinary farm conditions and with a minimum of assistance.[1] The area selected for the scheme was in Ayrshire, covering approximately nine square miles and containing thirty-seven farms. The average number of milking cows was twenty-six per herd. All the farmers in this area were invited to participate in a scheme to eradicate tuberculosis from their herds. The assistance given took the form of the provision of free tuberculin and free testing and advice on methods of isolation, disinfection, and on the rearing of young stock. No other direct incentives were offered. The reactors were not slaughtered, no compensation was paid, and apparently no restrictions were placed in the way of free sale or other method of disposal of reacting animals. The scheme was on Bang's lines, and various methods were utilized to separate reactors from non-reactors, from removal to separate premises to housing at different ends of one building with such precautions as were possible to prevent infection from the tuberculous animals to those free from tuberculosis. Special care was taken to keep young stock free from infection. The re-testings with tuberculin were carried out at six-monthly intervals. Very few animals were brought into the herds, but where this was done the entrants were tested before entering the area. The experiment lasted for three years, and the results achieved are set out in several tables and also discussed in detail for each herd. If we take the gross figures at the first test there were 385 reactors (26·1 per cent.) out of 1,475 animals tested, and at the seventh test 211 reactors (12·3 per cent.) out of 1,635 animals. The author divides the herds into four groups with the following findings:

Group.	*Initial Number of Reactors.*	*Number of Herds.*	*Condition at End of Seventh Test.*
1	0	8	All free.
2	1-25 (average 8 per cent.)	9	,, ,,
3	25-50 (,, 40·5 ,, ,,)	8	Average of 21·6 per cent.
4	50-75 (,, 55·6 ,, ,,)	5	,, 29·0 ,, ,,

While these results show substantial progress, looked at from another aspect they appear less satisfactory. Directing attention only to the herds which at the inception contained more than 10 per cent. of reactors, we find that there were fifteen such herds which were given the full seven tests. With these herds the results showed: Complete eradication, 5; reduction to under 10 per cent. reactors, 0; reduction to 10-20 per cent. reactors, 2; reduction to 20-30 per cent., 5; reduc-

[1] "The Eradication of Bovine Tuberculosis." By L. Jordan, Ph.D., M.R.C.V.S. Special Report Series, No. 184, of the Medical Research Council. Pp. 104. London: H.M. Stationery Office 1933. Price 2s. net.

tion, but reactors still over 30 per cent., 1; actual increase in the number of reactors, 2. It is of interest to note that of the five herds entirely free, in one the herd could not be cleared until the owner sold all his reactors, in a second the herd was only cleared when all the stock was sold and fresh introduced, and in a third good results were only achieved when all reactors were cleared out of the main byre. In view of the heavy infection of our dairy herds, herds with over 10 per cent. of reactors are the ones of interest, and the figures show that the results obtained were decidedly unsatisfactory for a majority of the herds. In other words, while the system employed can give excellent results with herds nearly free from tuberculosis, the experiment has not demonstrated its practical utility to eliminate bovine tuberculosis as applied to the average highly infected herd. This is in accord with experience elsewhere, where it has been found that any system of leaving the reactors on the farm is not good enough to effect anything in the nature of an eradication of bovine tuberculosis. A reduction in the number of infected animals can be obtained, but unless there is continuous unremitting care subsequently the percentage of reactors is liable to rapidly increase again. To have been able to demonstrate the considerable results shown with such simple methods is, however, a great achievement, particularly as some of the factors operating seem to have been rather adverse. It is important to make clear that the experiment has not demonstrated that the proper way to deal with bovine tuberculosis in this country is along the lines followed with the very incomplete separation of reactors, but it does emphasize that the eradication of bovine tuberculosis is a perfectly feasible proposition, and that there is nothing insuperable in the way of starting eradication schemes now. The author draws attention to the general improvement shown in the herds and in the appreciation of stock—both points of great importance. He has to record that there was no increased demand for milk from the tuberculosis-free herds. In this review of the report only the experimental work done has been discussed, but it should be mentioned that it also contains an immense mass of useful information and a valuable discussion upon the value of the different procedures now in operation to influence bovine tuberculosis and the infection of the milk supply. For example, the author examined samples of milk (once only) from 636 reactors but without any clinical symptoms of tuberculosis, and nine of them (1·4 per cent) contained tubercle bacilli, a point on which information has long been required. The effectiveness or otherwise of existing legislation is often discussed, and the author points out: "The Tuberculosis Order, even when supplemented by clinical inspection of cattle under the Milk and Dairies Act, can do little towards reducing the percentage of tubercular animals in dairy herds. . . . These results provide clear evidence that neither the Tuberculosis Order nor routine clinical inspection is effective as a safeguard against the tubercular infection of milk destined for human consumption." The report also includes a valuable discussion upon the interpretation and reliability of the double intradermal test, and notes upon the measures taken in various countries to combat bovine tuberculosis. The whole report is of great value, and should be read by everyone interested in the elimination of bovine tuberculosis and in the prevention of human tuberculosis of bovine origin.

W. G. SAVAGE, M.D.

TUBERCULOUS MENINGITIS.

Dr. T. A. Jousset has written an interesting little monograph on the problems of tuberculous meningitis. She has carried out a series of pathological studies in the laboratories of the Salpêtrière, the results of which tend to throw some light on the cause of death and the reasons for the high mortality in this affection. Cerebral compression was found to play a relatively secondary rôle in the mechanism of death. Of prime importance is the very early implication of ganglion-cells, proceeding to necrotic changes in the brain-stem. The author has tabulated a list of seventy-four cases of tuberculous meningitis, collected from the literature, which have not ended fatally. Their own series contains the remarkable number of fifteen cases, in all of which tubercle bacilli were isolated in the cerebrospinal fluid. Each of these cases was treated with injections of "allergine"—a phosphatid extract of special tubercle bacilli, selected on account of their properties of solubility. Full details as to the method of preparation of allergine and the technique of its employment are given in this book. It is obvious that a communication of this importance will be avidly studied, and further confirmation will be eagerly awaited at the hands of other investigators.[1]

MACDONALD CRITCHLEY, M.D., F.R.C.P.

CAVITATION IN THE TUBERCULOUS LUNG.

In Germany as well as in England attention has recently been focussed on the origin and treatment of cavities in the lung. Dr. Alexander's booklet may be looked on as an authoritative treatise on this interesting subject.[2] In addition to the theories of cavity formation which are current in England, some annular shadows, characterized by the absence of increased translucency within the ring, are looked on as being due to pre-cavernous demarcation, a condition in which a tuberculous focus is assumed to be surrounded by a zone of cellular infiltration sufficiently dense to cast a shadow on the film. This theory is made use of to account for the frequent and rapid disappearance of these shadows, but no post-mortem evidence of the occurrence of such a condition is put forward. In the section dealing with diagnosis the author refers to the uncertainty of physical signs and the superiority of radiology, not only in the diagnosis, but also in the determination of the exact situation and size of a cavity. As regards treatment, all early cavities are looked on as a contra-indication to either tuberculin or gold therapy until such time as there is definite evidence of the beginning of a healing process. Light treatment is considered dangerous for a still longer period. Most attention is given to the various forms of collapse therapy. Early (round) cavities give the best results with pneumothorax treatment, adhesions being infrequent in this type of lesion, but as spontaneous healing is also common, Dr. Alexander recommends a preliminary period of general rest controlled by serial X-ray films. If after two to three weeks the disease is still in a highly active condition pneumothorax is

[1] "Étude et Traitement de la Méningite Tuberculeuse." By Thérèse A. Jousset. Preface by Dr. André Jousset. Pp. 152, with 10 figs. and graphs. Paris: Masson et Cie., 120, Boulevard Saint Germain. 1933. Price 30 fr.

[2] "Die Tuberculöse Kaverne." By Hanns Alexander. Tuberkulose-Bibliothek No. 51. Pp. 47, with 72 illustrations. Leipzig: Johann Ambrosius Barth. 1933.

best; in other cases six to eight weeks' general treatment should be given and pneumothorax carried out unless there is evidence of spontaneous healing. Phrenic evulsion also gives good results in these soft-walled cavities, but the author deprecates the practice of preferring this operation to pneumothorax, as the former causes permanent and considerable reduction in functional activity. Old fibrotic cavities are usually surrounded by too many adhesions for pneumothorax to be effective, but there is no harm in making the attempt. If cauterization is impossible, partial or total thoracoplasty is better than the continuation of a useless partial pneumothorax. Single thick-walled apical cavities rarely respond favourably to phrenic evulsion, but it is in this type of case that apicolysis gives its best results. The text is profusely illustrated by radiograms excellently reproduced.

ANDREW MORLAND, M.D., M.R.C.P.

TUBERCULOSIS AND THE CHILD.

"The brightest beacon that has ever lighted the path of the tuberculosis worker is the new knowledge and the larger understanding of tuberculosis in childhood." So says Professor J. Arthur Myers in his new work on tuberculosis and the child.[1] Dr. William P. Shepard, in his sympathetic Introduction, claims that "a new vision of possibilities in tuberculosis control is revealed in this volume." Certainly the author urges with reason that tuberculosis be stopped at its source, namely, the tuberculous person or animal, that apparently "healthy" carriers of the disease be sought out and isolated, and that special attention be given to known contacts. In sixteen chapters Dr. Myers elaborates his programme, setting forth in concise, convincing and effective manner essential facts, governing principles and practical measures. There are chapters on Portals of Entry of the Tubercle Bacillus, the Finding of Tuberculous Children, Control at Different Ages and under Varying Conditions, Disposal of Cases, Strongholds of Tuberculosis, and Prevention among Non-Tuberculous Children. The concluding chapter describes a scheme for the solution of the problem. "The tuberculosis programme for the future does not include any new or startling procedure nor any revolutionary ideas, rather it consists of an intelligent understanding of the facts at hand, and the employment of these facts as a tried and true foundation for future actions. These include a widespread testing of children in order to screen out those who require special supervision and treatment before symptoms appear, the greatest possible use of the hospital facilities and research projects, even greater stress on the known strongholds of tuberculosis, and a wholehearted continuance of the present educational campaign, so that the essential facts of the disease will be household knowledge throughout the length and breadth of the land." Of course Dr. Myers has addressed his monograph primarily to American readers, but it is a work which should be studied by medical advisers, particularly medical officers of health, tuberculosis officers, school medical officers, and all who, as

[1] "The Child and the Tuberculosis Problem." By J. Arthur Myers, Ph.D., M.D., F.A.C.P., Professor of Preventive Medicine, University of Minnesota; Chief of Medical Staff, Lymanhurst School for Tuberculosis Children. With an Introduction by William P. Shepard, M.D., F.A.P.H.A., Welfare Director, Western Division, Metropolitan Life Insurance Company. Pp xvi + 230, with 21 illustrations. Chapter summaries. London: Baillière, Tindall and Cox. 1932. Price 17s. 6d.

members of the medical and educational professions, come in contact with children and have to plan and advise regarding their welfare. The work is indeed one which will appeal to all interested in the tuberculosis problem. The work is well planned, effectively produced with instructive illustrations, and has a select bibliography.

TUBERCULOSIS CONTROL.

Professor Goldberg has produced a comprehensive guide to procedures in tuberculosis control, which is to be commended to the consideration of all interested in the organization and administration of tuberculosis schemes and the care of tuberculous patients.[1] The volume consists of forty-three chapters grouped in three sections, the third of which is devoted to considerations relating to the sanatorium. The author analyzes and criticizes methods, procedures, and institutions, evaluating them mainly in terms of control. It is shown that tuberculosis gives rise to a multiplicity of problems of prevention and treatment varying with race, age and many other factors, making it difficult to estimate and interpret results. Professor Goldberg for over twenty years has been actively engaged in tuberculosis work, and for four years of this time acted as director of the municipal tuberculosis organization of the city of Chicago, including its dispensaries and sanatorium. His book covers a wide range, and furnishes statistics and other data regarding tuberculosis as met with in the United States of America. While appealing primarily to those dealing with the tuberculosis movement in the United States it will be of interest and service to tuberculosis officers and others engaged in tuberculosis work in this country. The sections dealing with legislation indicate under what statutory powers a tuberculosis service is carried on in America. There are suggestive sections on Home Treatment and Heliotherapy. In the sanatorium section is an elaborate exposition as to diet, with tables giving basic dietaries. A special chapter is devoted to undergraduate instruction on tuberculosis. The article on sanatorium planning by Mr. Kinder provides a short account in which location and exposure and orientation receive chief consideration. The volume concludes with chapters on the General Hospital and Tuberculosis and the Follow-up of Tuberculous Patients. The whole work is one which all responsible for the control of tuberculosis will do well to study critically and in its entirety. The volume is illustrated with maps, charts and figures, and there is a select bibliography.

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

Drs. Pescher and Hervy have provided a manual in a semi-medical, semi-popular style dealing with the mechanism of respiration and the physical methods by which the ventilation of the lungs may be

[1] "Procedures in Tuberculosis Control for the Dispensary, Home, and Sanatorium." By Benjamin Goldberg, M.D., F.A.C.P., F.A.P.H.A., Associate Professor of Medicine, University of Illinois. With a chapter on Sanatorium Planning by Thomas B. Kinder, of New York City, and an Introduction by David J. Davis, M.D., Ph.D., Dean of the College of Medicine, University of Illinois, Chicago. Pp. 373, with 54 illustrations. Philadelphia, U.S.A.: F. A. Davis Company. 1933. Price $4.00.

improved.[1] In addition to breathing exercises, much importance is attached to the "spiroscope" invented by one of the authors, and providing a simple means of breathing against pressure. It is unfortunate that a method of proved, although limited, value should suffer from such exaggerated claims as are made in this book, and medical readers are not likely to be impressed by the account of a family in which one child having died of tuberculous meningitis, another was saved from contracting this disease by breathing exercises. Similarly, the claim that in the same way the age of a hundred years may be reached can hardly expect serious consideration.

ANDREW MORLAND, M.D., M.R.C.P.

Dr. Andrew Morland has added a compact little work on Pulmonary Tuberculosis to the series of "Pocket Monographs on Practical Medicine."[2] It is addressed to general practitioners, who, as the author says in his preface, "in spite of the spread of specialization, remain the most important branch of the profession dealing with the individual tuberculous patient." Dr. Morland rightly claims that "for the best results to be obtained, proper co-operation between the general practitioner, the consultant, the tuberculosis officer, and the sanatorium physician is necessary." Dr. Morland has accomplished a difficult task with rare skill in condensing essentials regarding tuberculosis of the lungs into 110 pages, emphasizing principal points in diagnosis, and describing such treatment as will be of service to the busy doctor. Attention is directed to the importance of understanding the psychological outlook of the consumptive patient. There is a sensible chapter on After-Care. The little book closes with a selected bibliography.

Nacktkultur, or the practice of nakedness, is attracting attention and adherents not only in Germany and America but to some extent in this country. The physiological and psychological as well as the æsthetic aspects of the new cult demand the serious consideration of medical advisers and others who can approach the subject without bias and in a scientific spirit. "On Going Naked" is a new work by an American woman who has practised Nacktkultur both privately and publicly, and now sets forth picturesquely in detail and with some humour the routine of nudist organizations in Germany, Scandinavia, France and other countries.[3] The authoress appears to have made personal observations in various lands and to have participated in the naked life there practised. The volume contains chapters on the Personalities of Nudists, Nudist Organizations and Literature, and the Implications of Nakedness. The concluding chapters seeks to anticipate the future of this strange cult. There is a Directory of Nudist Clubs. The publishers have thought well to issue this volume in a silver-coloured wrapper reproducing a photograph of a young woman in a state of nudity. The work, although scarcely scientific in

[1] "La Rééducation Respiratoire." By J. Pescher and Jean Hervy. Pp. 134, with 2 figs. Paris: G. Doin et Cie, 8, Place de l'Odéon. 1933. Price 26 francs.

[2] "Pulmonary Tuberculosis in General Practice." By Andrew Morland, M.D., M.R.C.P., Resident Physician, Mundesley Sanatorium. Pp. ix+113. London: John Bale, Sons, and Danielsson, Ltd., 83, Great Titchfield Street, W. 1. 1933. Price 2s. 6d.

[3] "On Going Naked." By Jan Gay. With Decorations by Zhenya. Pp. 176. With illustrations. London: Noel Douglas, 28-30, Little Russell Street, W.C. 1. 1933. Price 7s. 6d.

its presentation, provides matter which medical men and women interested in personal hygiene and public health and called to advise in regard to Nacktkultur should be acquainted with.

Tuberculosis has for long figured in fiction, and some few books have described the residence of patients at Davos and other health centres where consumptives congregate, but the number of stories of life in a sanatorium is limited. Mr. David Esdaile has succeeded in writing a novel which presents vivid pictures of personalities undergoing institutional treatment.[1] The author has manifestly a first-hand acquaintance with sanatorium routine and the ways of doctors, nurses, and others who direct, control, and generally enliven the period of residence under open-air conditions. Medical superintendents will do well to read this book, for it gives a picture of sanatorium procedure as at least one patient has viewed it.

Dr. C. H. Auty has compiled a helpful manual on Inhalation Therapy which the medical practitioner will find of practical service.[2] The apparatus is described and illustrated, and methods of treatment are described. The concluding section deals with diseases, including certain affections of the respiratory system, in which inhalation has proved useful.

Dr. Frederick W. Price and those who have collaborated with him in the production of the most popular of modern textbooks of medicine are to be congratulated on the appearance of a new and fourth edition.[3] This notable work for students and practitioners of medicine was first published in 1922, and after the issue of five separate impressions reached its second edition in 1926 and its third edition in 1929. And now within the short space of four years a thoroughly revised and strikingly up-to-date fourth edition has appeared. Such a rapid development indicates the widespread approval which has been accorded to this comprehensive and exceptionally complete treatise. The work has undergone careful revision, and is likely to maintain its position as the most authoritative and serviceable of present-day textbooks on the principles and practice of medicine. As would be expected of those responsible for the issue of a member of the series of Oxford Medical Publications, the volume is admirably produced, being effectively printed on good thin paper, and supplied with a particularly complete and helpful index. The new volume presents a number of alterations in classification, general arrangement, and nomenclature. Under General Infectious Diseases are two new Sub-Sections on Rickettsia Diseases and Diseases due to Filtrable Viruses, to one of which certain articles from the Sub-Sections on Bacterial Diseases and Infectious Diseases of Doubtful or Unknown Ætiology have been transferred. Other communications have undergone rearrangement. There are numerous articles, many have been largely or wholly re-written, and much new matter has been added.

[1] "Eat, Drink, and Be Merry." By David Esdaile. Pp. 281. London: Longmans, Green and Co. 1933. Price 7s. 6d.

[2] "Modern Inhalation Therapy for the General Practitioner." By C. H. Auty, M.R.C.S., L.R.C.P., Medical Officer, No. 2 District, Willesden. Pp. vii+66. London: William Heinemann (Medical Books), Ltd., 99, Great Russell Street, W.C. 1. 1933. Price 3s. 6d.

[3] "A Textbook of the Practice of Medicine." By various Authors. Edited by Frederick W. Price, M.D., F.R.S.E. Fourth edition. Pp. xlv+1995, with 106 illustrations. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C. 4. 1933. Price 36s.

There are a number of fresh illustrations. The List of Contributors includes no less than twenty-seven, all connected with London's great hospitals and medical schools. The sections dealing with Tuberculous Disease are to be found in several parts of the book, and generally arranged according to the special system under consideration. There is an excellent introductory article provided by Lord Horder in the section dealing with General Infectious Diseases. The account of Pulmonary Tuberculosis, covering twenty-four pages, has been prepared by Drs. R. A. Young and G. E. Beaumont. Dr. Harold Barwell writes on Tuberculosis of the Larynx; and other sections deal with tuberculosis as met with in other parts of the body. This brief enumeration will, we believe, be sufficient to indicate that the work is not only a necessity for every medical practitioner, but one which no student desirous of fully equipping himself for examination can afford to be without. Considering the comprehensive character of this great one-volume textbook of medicine, it is issued at a price which must be considered remarkably low.

Among the many fine volumes which have been issued this season there is one which will remain in the forefront as an ideal gift-book for doctors and patients. "The Pageant of Tower Hill," prepared by the founder of Toc H and Dr. Leftwich, provides a wonderful tonic for all. Lord Wakefield, who has preserved Toc H for all time as a British possession, in his sympathetic commendation with rare vision anticipates the speedy coming of the time when Tower Hill will regain its own and become again "the Pleasance proudly held between the Crown and the City of London"—"a noble space supreme as a promenade, the pride of home-coming sons and daughters of the Empire, the admiration of the foreign visitor, a public park set with grass and trees, bounded upon the east by the historic City Wall and on the south by the Tower itself. Here will be heard music and the sound of children's voices from playgrounds on the river beach." This is the glorious picture which Lord Wakefield envisages, and which is revealed in "The Pageant of Tower Hill."[1] But the "neglected Hill" awaits the coming of a great restoration, and the handsome volume which lies before us will hasten the desired achievement. An Advisory Body, of which Lord Wakefield is President, has already laid the foundation of the great City project to provide the historic Tower Hill as an open space in its ancient setting for all time. The beloved "Tubby" and his colleague, Dr. Leftwich, librarian of Customs House, have produced a captivating historic story of this ever notable section of London; and with its splendid series of pictures and maps it is worthy of the subject and the scheme it seeks to establish as an accomplished fact.

Mr. R. H. Mottram's charming history of and descriptive handbook to England's eastern province will appeal to many of our readers who are interested in Norfolk and adjacent counties.[2] The work is appro-

[1] "The Pageant of Tower Hill." By the Rev. P. B. Clayton, C.H., M.C., F.S.A., Vicar of All Hallows, Barking-by-the-Tower, Founder Padre of Toc H; and B. R. Leftwich, M.B.E., F.R.Hist.S. With a commendation by the Right Hon. Lord Wakefield of Hythe, C.B.E., LL.D. Pp. xiv+328, with a coloured frontispiece, numerous illustrations and maps. London: Longmans, Green and Co. 1933. Price 12s. 6d.

[2] "East Anglia: England's Eastern Province." By R. H. Mottram. Pp. xv+358. London: Chapman and Hall, Ltd., 11, Henrietta Street, W.C. 2. 1933. Price 8s. 6d.

priately dedicated to Russell James Colman, Lord-Lieutenant of Norfolk. In seven appealing chapters the wonderful part of East Anglia, its celebrated men and women; its palaces, castles, churches, ancient houses, and other outstanding buildings; its industries, excursion possibilities, and health centres receive picturesque consideration. Several important hospitals, sanatoria and other institutions are to be found in this eastern area, and along the coast-line are a number of popular health stations. The geographical features of the country are effectively portrayed. The author has devoted much time and taken considerable trouble to make his book worthy of its subject. The illustrations, reproductions of paintings, drawings and engravings by well-known artists add greatly to the attractiveness and value of this notable and admirably produced book.

Mr. Harry Batsford and Mr. Charles Fry have produced a perfectly delightful picture book with picturesque text, which will appeal to true Scots and all real lovers of Scotland.[1] This survey of Scottish scenery, with its informing and revealing descriptions of highlands and islands, lowlands and uplands, which so effectively accompanies the most beautiful photographs of Scotland which we have ever seen, is a work to possess and peruse at leisure. Such a volume as this is an exposition of the influences which have gone to the making of national history, character and literature. Truly, as Mr. Buchan says in his sympathetic Foreword, "the face of Scotland does not permit of facile generalizations, and it is easier for pictures than for words to reveal its infinite variety." The volume contains 115 photographs: an unrivalled panorama of Scottish scenery—mountains, hills, moors, lochs, rivers, islands and fretted coastline. There is a fine section on Scottish buildings, and illustrations of old towns, villages, castles, abbeys and ancient houses. The coloured frontispiece of a scene in Sutherland is from a water-colour by Mr. W. Russell Flint, R.A. The publishers have produced the book in worthy form. It is an ideal gift-book for anyone who proposes to go North in search of health or for the recuperation of mind and body which comes from a Scottish holiday. We particularly commend this handsome volume to the notice of doctors, many of whom in the British Isles come of Scottish stock and have enjoyed a medical training in the Universities of Scotland.

The famous firm of Bartholomew, geographical editors, printers and publishers have issued a new and revised edition of their wonderful Pocket Atlas.[1] It contains 120 coloured maps and 80 pages of a World Gazetteer. This inexpensive, informing, attractive little work is a truly marvellous reference book which everyone who reads a newspaper should possess. It is a pocket companion which nobody can afford to be without.

[1] "The Face of Scotland." By Harry Batsford and Charles Fry, with a Foreword by John Buchan. Illustrated with drawings by Brian Cook and from photographs. Pp. x+117. London: B. T. Batsford Ltd., 15, North Audley Street, W. 1. 1933. Price 7s. 6d.

[2] Bartholomew's Pocket Atlas of the World and Gazetteer. New and revised edition. Edinburgh: John Bartholomew and Son, Ltd., 12, Duncan Street. Price 2s. 6d.

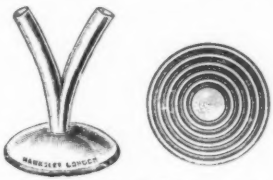
PREPARATIONS AND APPLIANCES.

HYGIENIC APPLIANCES AND THERAPEUTIC PREPARATIONS.

THE RADIATION HOME CLINICAL GAS LAMP and THE "RAYBOL" PORTABLE GAS HEATER are two appliances which should be known to all doctors, nurses, and others who have to advise in regard to the hygienic and therapeutic employment of heat and light.[1] Not only in connection with hospitals, sanatoria, open-air schools and other institutions, but in dispensaries, surgeries and the various apartments of an ordinary dwelling-house, the above-named up-to-date equipments will be invaluable. THE RADIATION HOME CLINICAL GAS LAMP is admirably constructed to supply infra-red rays in a form for therapeutic service. The lamp is such that it can be safely employed by the patient in his own home, and furnishes an effective source of irradiation for the treatment of rheumatic, neuritic and other disorders in the prevention and cure of which application of short infra-red rays has proved particularly efficacious. The special radiant is situated near the focus of the parabolic reflector, which is made of highly polished stainless metal specially selected to reflect short infra-red radiations. The gas is supplied to the lamp from the main by means of a flexible tubing, and this allows for transfer from one room to another. This lamp, when not required for therapeutic purposes, can be employed for the heating of an apartment and for use in a bathroom, sick-room, study or elsewhere, where it will provide a very real comfort. It should be noted that the stand is finished in art white, with chromium-plated fittings. The stainless metal bowl is furnished with a nickel-plated dress guard. (The price complete is 37s. 6d.) THE "RAYBOL" PORTABLE GAS HEATER somewhat resembles the clinical lamp, and consists of a polished copper bowl fitted in its centre with a special radiant mantle from which radiant heat can be focussed on to any particular part of the body. The bowl can be adjusted to any angle. Gas is conveyed to the heater by flexible tubing, so allowing for free movement from room to room as required. The maximum consumption of gas is only five cubic feet per hour. (The price of the "Raybol" heater complete is 10s., and radiants for replacement cost 1s. 6d. each.) For simplifying the employment of these appliances an ingenious fitting called "THE PLUG-IN CONNECTOR" has been introduced. This consists of an arrangement whereby the plug of the flexible gas-carrying tube is pushed into the socket of the connector, automatically making a perfectly safe connection and turning on the gas. The action of withdrawing the plug turns off the gas. A plug-in connector can be fitted in any room, providing a standard connection for any portable gas apparatus. (The price is 2s. 9d. to 4s.)

[1] Full particulars regarding the above-described appliances and other gas-supplied equipments can be obtained on application to the Gas Light and Coke Company, Horseferry Road, Westminster, S.W. 1.

THE HAWKSLEY METALLIQUE STETHOSCOPE CHEST-END deserves the attention of all clinicians.[1] It is an equipment of the diaphragm type, consisting of a dome-shaped resonator with a thin metal covering forming a diaphragm of a specially constructed type. This diaphragm is particularly sensitive, and provides clear, distinctive notes without distortion. Being made of metal, it is more durable and less liable to deterioration than those of the customary vulcanite forms. Moreover



THE HAWKSLEY METALLIQUE STETHOSCOPE CHEST-END.

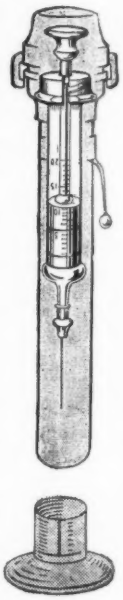
the chest-end can be warmed or sterilized without damage to the instrument. When employed in connection with the registration of blood pressure an armband and fastening can be fitted to the chest-end. (The price of the chest-end is 10s. 6d.; with armband, 14s.; and complete with binaural stethoscope, £1 1s.) We have tested this new chest-end, and would commend it to tuberculosis officers, medical superintendents of hospitals and sanatoria, as well as to general practitioners and all engaged in the clinical investigation of chest cases.

THE ROBERTS KNEE TABLE is a novelty which will appeal to everyone.[2] It will, however, be of special interest and service to patients and others who, in connection with sanatoria, open-air schools and other institutions, have to rest in the open air or elsewhere. For all classes of invalids and cripples it will be invaluable. The special features of this knee table are indicated in the accompanying figure. It is of simple construction, with no gadgets to get out of order or complicate its efficiency. The simple insertion of one or two pins fixes the table in perfect safety. It is also light in weight, and when not in use can be folded flat. The table top is reversible, so that one side forms a tray with a heat-resisting surface while the other is perfectly flat and baize covered. It can be employed equally well in a chair with or without arms. The legs are of sufficient length to provide a level table with the highest of armchairs. This new form of table only requires to be used to be appreciated. (The price is 14s. 6d., carriage paid.)

THE ROBERTS KNEE TABLE.

[1] Full particulars regarding the Metallique Stethoscope Chest-End and varieties of Stethoscopes can be obtained on application to Hawksley and Sons, Ltd., 83, Wigmore Street, W. 1.

[2] The Roberts Knee Table is manufactured at the Lord Roberts Memorial Workshop for Disabled Soldiers and Sailors, 122, Brompton Road, S.W. 3, and can be obtained from most of the leading London stores.



THE "BENCARD" SPECIAL INSULIN SYRINGE.

THE "BENCARD" SPECIAL INSULIN SYRINGE has been specially designed and made to provide for the effective administration of insulin.[1] In certain tuberculous subjects insulin has been found of service. The syringe offers a number of good points. It is graduated both in units and in cubic centimetres; there are two sets of graduation, one for single strength and one for double strength. The syringe is retained in a case which contains spirit, thus keeping it sterile and always ready for use. The case is safely closed by a simple and effective bayonet-catch attachment, insuring that it is absolutely spirit-tight and yet easy to open or close. The equipment is provided with a small stand, in which the case containing the syringe can be maintained in the vertical position, so preventing the upsetting and loss of the spirit. The syringe and case is of British make, and is of the "Record" type. The case is provided with a pocket clip, and can be safely carried in the doctor's waistcoat pocket. (The price complete is 11s. 3d.; the stand is 1s. 3d., and spare syringes are 5s. each.)

THE "MILLETT" ATOMISER of the type "N" is a new form of British-made equipment for the atomization of both oil and aqueous medicated solutions.[2] It has been specially designed to provide an effective spray for the cleansing and treatment of disordered conditions of the nose and throat. It consists of a glass receptacle, into which is placed the exact quantity of medicament. The necessary fittings are chromium plated, and the bulb is composed of the best quality of rubber. The whole equipment is sent out wrapped in cellophane and sealed, so securing perfect safety from danger of contamination. For use in hospitals and sanatoria where tuberculous and associated affections involving the larynx and respiratory passages have to be dealt with this excellent atomiser will be greatly appreciated. (The price is 4s. 6d.)

THE BOWMAN CUPBOARDS will be of service not only in private houses, schools and institutions, but also in connection with hospitals, sanatoria, open-air schools, and other places providing for the needs of both the sick and the sound.[3] They are inexpensive, strong, well designed and effectively constructed of sound wood. Each is fitted with movable shelves and provided with lock and key. They can also be supplied to serve as a wardrobe, with one shelf and sliding rail. (Prices are 14s. 11d. (1) for cupboard 6 feet high, 2 feet wide and 13 inches deep; and (2) 17s. 11d. for cupboard 6 feet high, 2 feet 4 inches wide and 16 inches deep.)

LISTERINE BRAND ANTISEPTIC is a combined antiseptic, deodorant and general germicide. It is made in this country, and is admirably suited to meet many needs in medical practice as well as main-

[1] The "Bencard" Special Insulin Syringe is supplied by C. L. Bencard Ltd., "Yalding House," 152-156, Great Portland Street, W. 1.

[2] The "Millett" Atomiser, Type "N," is manufactured by Atomizers Ltd., 13, Great Pulteney Street, W. 1.

[3] The Bowman Cupboards are supplied by Messrs. Bowman Bros., Ltd., High Street, Camden Town, N.W. 1.

taining personal and domestic hygiene.[1] It is an agent of special service in sanatoria and elsewhere where tuberculous subjects have to be cared for. Numerous tests have established its high germicidal powers. It is a many-sided beneficial agent, a reliable cleanser, an aid to healing and an effective guard against infection. It has many advantages, being non-toxic and causing no irritation to skin and mucous membrane. In maintaining mouth hygiene, preserving teeth, correcting offensive breath, preserving the skin in health and attractiveness, dealing with offensive sweating and body odours, and in the treatment of sores of the mouth and cuts and scratches generally, Listerine Antiseptic is excellent. It is also of service in soothing aching feet and dealing with insect bites. For use at home and abroad experience has proved Listerine Antiseptic to be an agent of outstanding values. The essential constituents are thyme, eucalyptus, baptisia, gaultheria, mentha, boric and benzoic acids and ethyl alcohol. The makers of Listerine Antiseptic also prepare a number of serviceable hygienic preparations for shaving, dental hygiene, etc.

DETTOL is a new germicide which, while of service everywhere as a reliable, non-toxic, non-irritant, harmless antiseptic, is particularly effective for use with tuberculous patients in hospitals and sanatoria, also in connection with children in open-air schools and other institutions.[2] The Rideal-Walker test proves Dettol to possess three times the potency of phenol. It has a pleasing odour, is an excellent deodorant, and does not stain or corrode metals or instruments. Moreover, it is stable in the presence of organic matter, such as blood, sputum, pus, etc. Dettol will be found an excellent preparation for use with sputum receptacles. It will be invaluable for service in connection with personal hygienic measures, the treatment of cuts, bites and abrasions, for the disinfection of linen and other materials, and for the spraying of rooms. Dettol promises to be of great service in surgery, gynæcology and midwifery. Dr. L. Colebrook and Mr. W. R. Maxted in their article on "Antisepsis in Midwifery," printed in the October issue of *The Journal of Obstetrics and Gynæcology of the British Empire*, testify to the value of Dettol and report the results of special tests. (Dettol is supplied in bottles, price 1s. each.) A form designated "Dettol Soluble" is available for members of the medical profession for sterilizing instruments. This gives a clear solution with water.

HARPIC is a sanitary preparation which is now extensively used in private houses as well as in connection with all types of public places and institutions.[3] It is an indispensable agent for use in connection with the cleansing of lavatory-pans, and is now replacing many of the dangerous chemicals formerly in use. Harpic disinfects and cleanses with a minimum of labour and supervision. Harpic dissolves in water, and so reaches the bend in the pipe where a brush cannot get. By the regular use of Harpic offensive odours are avoided. This excellent agent only needs to be known and used to be appreciated.

"TRANSPARA"—the Transparent Book Cover—will appeal to all

[1] Full particulars regarding Listerine Antiseptic and other Listerine preparations can be obtained on application to the Lambert Pharmacal Company, 38, Standard Road, Park Royal, N.W. 10.

[2] Full particulars regarding Dettol may be obtained on application to Messrs. Reckitt and Sons, Ltd., Pharmaceutical Department, Hull.

[3] Harpic is manufactured by Messrs. Reckitt and Sons, Ltd., of Hull, from whom particulars may be obtained on application.

book-lovers, and will be of special service in hospitals, sanatoria and open-air schools.[1] Its hygienic value is self-evident. Made of leather cloth, which is washable, durable and attractive, it is of the customary size of the ordinary novel, but may be obtained in other sizes, and covers may be made of any size and of any colour to meet the desires of librarians and other customers. An automatic book-marker is supplied with each Transpara. (The price is 2s. 3d. each, plus 3d. for postage and packing.)

At this season of the year chocolates and other confections are particularly welcome as gifts for patients in hospitals and sanatoria as well as for the sound in mind and body. The world-famous firm of Cadbury Brothers, Ltd., of Bournville, near Birmingham, have this season provided specially attractive examples of their products.[2] Chocolates and other delightful confections in various shapes, sizes and decorations are available in artistic cases, and provide ideal gifts both for the sick and for the sound. For patients in hospitals and sanatoria and children in open-air schools these Cadbury collections are always welcome. The long-approved varieties of chocolates assorted with milk, nuts, fruit, etc., still maintain their popularity. Messrs. Cadbury are now providing a series of gifts on presentation of coupons from users of Bournville Cocoa.

"Queen Anne" Lavender Water is a delightful preparation for sick-rooms and for all classes of patients.[3] It is ideal for the subjects of tuberculosis and other wasting diseases, especially when sweating is a troublesome symptom. This form of lavender water possesses a delicate, refreshing perfume, and is cool, calming and restorative for sleepless, restless, irritable subjects. It is supplied in attractive, convenient, golden-capped, screw-top bottles, and if desired an arrangement for spraying can be obtained.

Catalsan is being extensively tried as a promising agent in the treatment of tuberculosis.[4] An article on "Investigations on Catalsan," by Dr. F. Gottdenker, appeared recently in *Tubercle*, and we have received from Messrs. Coates and Cooper, Ltd., other publications on the subject, copies of which we understand can be obtained by medical advisers interested in Catalsan. Catalsan is manufactured by the Swiss-Serum and Vaccine Institute, Berne, and is controlled by Professor Weichardt, Erlangen, for its activity.

Cromessol is made from essential oils of flowering plants combined with formaldehyde.[5] It is available in several forms—sweet lavender, Cologne, carnation, etc. Special sprayers are provided, which are so constructed as to produce a fine penetrating mist. Cromessol is a disinfecting and deodorizing preparation, which will be of service in hospital wards, sick-rooms, and wherever it is desirable to sweeten a stale or foul atmosphere, overcome bad odours, and give a pleasing fragrance to an apartment. A small outfit is available for home use

[1] Further particulars regarding the "Transpara" Book Cover can be obtained from the maker and patentee, F. Vasilescu, 5, Lonsdale Road, Kilburn, London, N.W. 6.

[2] Particulars regarding the products of Cadbury Brothers, Ltd., manufactured at their Bournville Works, near Birmingham, can be had on application.

[3] "Queen Anne" Lavender Water is manufactured by Marlborough and Co., Ltd., 491-493, Liverpool Road, N. 7.

[4] Catalsan is imported under License of Ministry of Health by the sole distributors, Messrs. Coates and Cooper, Ltd., 94, Clerkenwell Road, E.C. 1.

[5] Cromessol is supplied by the Cromessol Company, Ltd., 140-148, Brand Street, Ibrox, Glasgow, S.W. 1.

(price 7s. 6d. complete), and larger sprayers are made for institutional use.

KROMO BEETLE POWDER is a preparation which is being extensively employed in many institutions for the destruction of beetles.[1] Quite a few hospitals and sanatoria are troubled with these pests. We would advise the authorities of such to try Kromo. It is a non-poisonous, exceptionally fine powder, which can be blown in the form of fine dust into cracks and crevices where beetles lurk. Institutions are supplied at special rates.

TI-TROL GERMICIDAL TOILET SOAP is a new form of cleansing agent which should find favour wherever a reliable antiseptic and germicidal soap is desired for professional or personal service.[2] The chief ingredient is Ti-Trol oil, and the lather of the soap possesses strong disinfectant properties and is pus solvent. Not only is the soap pleasing, non-toxic, and non-irritant for ordinary hygienic use in the cleansing of the healthy body and the hair, but it is of special service in treating skin lesions, cleansing wounds, deodorizing perspiring feet, and generally dealing with disorders of the skin and hairy scalp.

THE H.B.T. ASEPTIC, HOUSEHOLD, TOILET AND SHAVING SOAPS are proving popular for use in hospitals, sanatoria and other institutions, as well as meeting all needs for domestic and personal service.[3] These soaps are made from materials of guaranteed purity. The toilet and shaving soaps contain elements obtained from living plant juices and flowers. These cleansing agents are fragrant and maintain the skin in health. For patients undergoing open-air treatment they are ideal.

"T. C. P." is the designation given to a new general antiseptic which is finding much favour.[4] Its chemical composition is thus indicated—Trichlorophenylmethyliodosalicyl in H_2O. It has a wide range of service, for it is non-toxic, non-caustic, possesses analgesic, antithermic, endosmotic and keroplastic properties as well as promoting healing processes. In the conduct of antiseptic therapy in sanatoria and elsewhere where tuberculous subjects are under treatment, "T. C. P." promises to render effective assistance. It is an organopolyhalogen compound, rich in hygienic and therapeutic properties. Among the special preparations of "T. C. P." one is available for inhalation therapy and for the treatment of respiratory affections.

GREENOSAN VITAMIN AND CHLOROPHYLL TABLETS are proving serviceable in the treatment of tuberculous patients and other debilitated cases.[5] They are prepared from fresh green vegetables and ripe fruit without the addition of deleterious drugs. Vitamins A and B are present in considerable amount, and tests on animals indicate that Vitamin E is also present. "Greenosan" is prepared in Denmark, where it is distributed under the name of "Spinatin" and extensively used. It is intended to grow the fruit and vegetables required for the

[1] Particulars regarding the Kromo Beetle Powder can be obtained on application to the Cromessol Company, Ltd., 140-148, Brand Street, Ibrox, Glasgow, S.W. 1.

[2] Ti-Trol Soap is manufactured by Du Menier Laboratories, Sydney, New South Wales, Australia, and is supplied in this country by Messrs. Fassett and Johnson, Ltd., St. John's Gate Buildings, 86, Clerkenwell Road, E.C. 1.

[3] Particulars regarding the H.B.T. Soaps can be obtained from Hunter Beattie, 25, Monteith Row, Glasgow.

[4] "T. C. P." is prepared by British Alkaloids, Ltd,, 104, Winchester House, Old Broad Street, E.C. 2, from whom full particulars can be obtained.

[5] Full particulars regarding Greenosan Tablets can be obtained from Mr. William Smith, 17, St. Botolph's Street, Colchester, Essex.

production of "Greenosan" in this country. It should be noted that these tablets appear to be of special value in aiding the recovery of sick children and in building up delicate boys and girls, especially such as have a tuberculous tendency.

COTY'S EAU DE COLOGNE is a particularly elegant and refreshing perfume which both the sick and the sound find of great service.[1] It is always welcome in hospitals and sanatoria, and is particularly appreciated by consumptives and other patients liable to profuse perspiration. This preparation of the ever-popular Eau de Cologne is comparatively inexpensive, and is supplied in artistic glass receptacles fitted with sprinkler top and red screw-on cap.

NIVEA CREME is a protective, cleansing, and revivifying skin preparation, with penetrating powers, rendering the skin smooth and soft.[2] It is admirable for patients and others living an open-air life. Doctors and nurses who often have to have their hands in disinfectants and other irritating solutions will find this cream valuable for maintaining the skin in good condition. Nivea can be employed for use both at night and in the daytime, and forms an excellent base for the application of powder and rouge. It is to be recommended for use the year round.

IODERMIOL is a new and elegant preparation whereby iodine can be employed locally.[3] It is a bland, non-irritating emollient, causing no stain, and is easily absorbed. It is available in liquid form and as an ointment. A particularly serviceable combination is the unguentum iodermiol et methyl salicyl containing 5 per cent. of iodine together with 5 per cent. of methyl salicylate. These excellent pharmaceutical preparations of iodine will be of value in dealing with certain tuberculous lesions.

HABUKA MOTH KILLER is a powder preparation which is supplied in convenient satchet form suitable for placing among clothes and other materials liable to suffer from invasion by moths.[4] It is perfumed a pleasant odour and is said to be an effective moth-killer.

ZONOL INSECT POWDER is a serviceable preparation for the destruction of beetles, cockroaches, crickets, ants, bugs, fleas, and other pests met with in hospital, institutional and domestic work.[5] It is non-poisonous, may be used in the presence of food, and the outlay entailed by its use is not great.

ABDULLA CIGARETTES—Turkish, Egyptian and Virginian—have for long ranked among the "Specials." They are great favourites among members of the medical profession,[6] and are much approved by many patients, affording comfort to those who in institutions and elsewhere at home and abroad or in their own homes are undergoing open-air treatment. A case of Abdullas at this season of the year forms a very acceptable present. The various forms of Abdullas are available in particularly attractive cabinets.

[1] Particulars regarding Eau de Cologne Coty can be obtained on application to Coty (England), Ltd., Coty House, 3, Stratford Place, W. 1.

[2] Particulars regarding Nivea Creme can be obtained from the manufacturers, Beiersdorf Limited, Welwyn Garden City.

[3] Particulars regarding the Iodermiol preparations can be obtained from the manufacturers, C. J. Hewlett and Son, Ltd., 35-42, Charlotte Street, E.C. 2.

[4] Habuka and other Cromessol preparations are supplied by the Cromessol Company, 140-148, Brand Street, Ibrox, Glasgow.

[5] Particulars regarding the Zonol Insect Powder can be obtained from Zonol, Ltd., Manufacturing Chemists, 59-60, Old Bailey, E.C. 4.

[6] An illustrated brochure, giving particulars and prices of Abdullas, will be sent to any address on application to Abdulla and Co., Ltd., 173, New Bond, Street, W. 1.

THE OUTLOOK.

NOTES AND RECORDS.

"The Hospitals' Year Book, 1933: An Annual Record of the Hospitals of Great Britain and Ireland," incorporating "Burdett's Hospitals and Charities, founded 1889," is published by the Central Bureau of Hospital Information, 12, Grosvenor Crescent, S.W. 1 (price 10s.). It is edited by R. H. P. Orde, B.A., and A. E. Ceadel, F.S.S., and is issued under the auspices of the Joint Council of the Order of St. John and the British Red Cross Society, and the British Hospitals Association (Incorporated). This unique work is now in its third year, and is an indispensable volume of reference for all workers in connection with hospitals and allied institutions. It opens with a general survey, financial review and résumé of the chief events of the hospital year. An important section is devoted to the conclusions and recommendations of the committee which has inquired into the out-patient departments of London's voluntary hospitals. There is also a consideration of the *Lancet* Commission on Nursing. Information is provided as to new buildings and extensions completed by voluntary hospitals, municipal hospitals, mental hospitals and sanatoria during 1931. The main part of the volume consists of effectively arranged analytical tables providing information as to all aspects of hospital administration. Readers of this JOURNAL and all responsible in any way for institutions dealing with tuberculous cases will be specially interested in the section setting forth particulars of the work, finances and staffs of sanatoria. Everyone who has participated in the production of this elaborate and most serviceable work is to be warmly congratulated. It should be noted that Sir Arthur Stanley, President of the British Hospitals Association, and Chairman of the Joint Council of the Order of St. John and British Red Cross Society, furnishes a sympathetic and explanatory Foreword.

"The Hospital Diary" will be warmly welcomed by hospital officials in all parts of this country, and many others should appreciate its excellent points.[1] In addition to its primary purpose of a diary with an allowance of two days to a page, much valuable specialized information is provided in the form of signed articles. We commend this admirable volume to the notice of medical superintendents, tuberculosis officers, and others connected with institutions conducted in the interests of patients suffering from tuberculosis.

Messrs. A. and C. Black may well be counted benefactors by all writers, artists and others who are engaged in journalistic work and contribute to periodical literature. Their "Writers' and Artists' Year Book" occupies a unique position among works of reference.[2] The

[1] "The Hospital Diary, 1934." Edited by Lieut.-Colonel Clement Cobbold, Secretary, The Cancer Hospital; and Harold F. Shrimpton, House Governor, The Children's Hospital, Birmingham. Pp. 320. London: G. R. C. Brook and Co., 27, Old Bond Street, W. 1. Price 5s. 6d.

[2] "The Writers' and Artists' Year Book, 1934: A Directory for Writers, Artists and Photographers." Twenty-seventh year of new issue. Pp. xi+326. London: A. and C. Black, Ltd., 4-6, Soho Square, W. 1. 1934. Price 3s. 6d.

latest edition is as complete as such a work can be made, and is a marvel of systematized compilation. Many readers of this JOURNAL will be glad to welcome this indispensable reference book, for among those who are health-seekers at home and overseas there are not a few who, while handicapped by tuberculosis and other physical ills, nevertheless contribute valuable service through their writings or artistic productions.

"The Medical Annual" is in its fifty-first year and is now generally recognized throughout the medical profession as an indispensable reference work which no member can afford to be without.[1] The volume for 1933 appears in its customary effective and attractive form. The contributors number thirty. There is a photograph and sympathetic sketch concerning the late editor, Dr. Carey Coombs. Readers of this JOURNAL and all interested in tuberculosis may be reminded that in a number of articles this subject is dealt with. Professor W. H. Wynn provides the section on Pulmonary Tuberculosis, in which he deals with the disease as met with in medical students, and with sanocrysin treatment. Mr. Tudor Edwards reviews the surgical treatment of pulmonary tuberculosis, making special reference to artificial pneumothorax, cauterization of adhesions, phrenicectomy, apicolysis and thoracoplasty. Mr. Hamilton Bailey, in the section on the surgery of the kidneys, refers to renal tuberculosis; and Mr. Rendle Short, in the review of the surgery of the intestines, has a paragraph on tuberculosis of the small intestine. Dr. W. H. Wynn furnishes surveys regarding lipiodol injections into the lungs and primary growths of the lungs and mediastinum. The volume contains a serviceable directory of sanatoria. Finally a special word of praise should be given to Messrs. John Wright and Sons, who for more than half a century have maintained "The Medical Annual" in a form worthy of British medicine.

"The Empire Municipal Directory and Year Book" is now in its fifty-first year of publication and fully maintains its premier position as a guide to all matters relating to developments connected with municipal engineering and public health.[2] The editorial section contains authoritative articles dealing with highway construction, sewage and water supply, motor transport, public lighting by electricity and gas, housing and town planning, public cleansing and sanitation, municipal and public health law, and many other matters relating to national health. There is a timely communication on public swimming baths. The Directory to local authorities at home and overseas and their officials makes the work invaluable for reference. There is also an up-to-date list of municipal engineering, public health and scientific societies. Diary space for a year's notes is also provided.

The King Edward VII. Welsh National Memorial Association, devoted to the Prevention, Treatment, and Abolition of Tuberculosis, has issued its Twenty-first Annual Report, containing Address by Lord Davies of Llandinam, its President; Report of the Council; detailed

[1] "The Medical Annual: A Year Book of Treatment and Practitioners' Index." Edited by the late Carey F. Coombs, M.D., F.R.C.P., and A. Rendle Short, M.D., B.S., B.Sc., F.R.C.S. Pp. civ+628+159. Bristol: John Wright and Sons, Stonebridge House, Colston Avenue. 1933. Price 20s.

[2] "The Empire Municipal Directory and Year Book, 1933-34." Pp. 332, with Diary space. London: The Sanitary Publishing Company, Ltd., Proprietors of *Municipal Engineering*, *Sanitary Record*, and *Municipal Motor*, 8, Bream's Buildings, Chancery Lane, E.C. 4. 1933. Price 12s. 6d.

Report by Dr. D. A. Powell, the Principal Medical Officer; Report of the Director of Research, Professor Lyle Cummins; and records from Area Officers' and Medical Superintendents' Reports, together with a number of special signed articles, altogether a record of fine service on which all concerned are to be congratulated.[1]

"The 'Wellcome' Photographic Exposure Calculator, Handbook and Diary, 1934," issued by Burroughs Wellcome and Co. (price 1s. 6d.), appears in its familiar pocket-book form, maintains the long-approved features, and contains valuable new matter. In addition to the diary and the section for exposure records, there is practical information which all photographers will find of service.

"The B.B.C. Year Book for 1934" is an indispensable work for every participator in the delights and benefits which we owe to the powers that be, human and wireless, in Broadcasting House.[2] It is a fascinating guide and reference book for all who own or use any form of wireless equipment, a review of the past and an anticipation of the future, and a year book which forms a complete summary regarding all departments of the activities so effectively administered by the board of governors, staff, and participators in the service of the British Broadcasting Corporation. The volume is charmingly got up and is instructively and artistically illustrated.

The Dunlop Rubber Company, Ltd., St. James's House, St. James's Street, S.W. 1, has favoured us with a copy of the new and fifth edition of "The Dunlop Guide to Great Britain." It is published by Ed. J. Burrow and Co., Ltd., of Imperial House, Cheltenham, and Wellington House, 125, Strand, W.C. 2 (price 5s.). This much-approved work should be in the hands of every motorist. It is a complete gazetteer to over 2,000 places, giving essential information regarding each, together with guidance as to hotels, inns, parking places, repairers, hills, and other local, technical, and general information. There is also an excellent up-to-date atlas extending over twenty-two pages.

"Christmas Seals," which have raised considerable sums of money in America and other countries in support of tuberculosis work, have this season for the first time been available in this land. The seals are sold at 4s. per sheet of 100, and can be obtained on application to the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, W.C. 1.

Dr. Peter Edwards, Medical Superintendent of the Cheshire Joint Sanatorium, near Market Drayton, Shropshire, is prepared to give a series of short intensive post-graduate courses on modern methods of therapy in tuberculosis of the respiratory system, with special reference to collapse therapy. Methods of sanatorium administration will also be demonstrated. No class will exceed four members in number, and those attending need not necessarily stay more than three days. Board and residence can be obtained within a convenient distance of the sanatorium. Further particulars may be had from the Hon. Secretary for

[1] "The King Edward VII. Welsh National Memorial Association (The Prevention, Treatment, and Abolition of Tuberculosis): XXI. Annual Report for the Year ended March 31, 1933." Pp. 157, with skiagrams and appendices. Cardiff: Memorial Offices, Westgate Street. 1933.

[2] "The B.B.C Year Book, 1934." Pp. 480, with diary of events, tables and map. London: The British Broadcasting Corporation, Broadcasting House, W. 1. 1934. Price 2s.

Post-graduate Courses, Joint Tuberculosis Council, 8, Highway Court, Beaconsfield, Bucks.

Early in the year it is well to remind post-graduates of requirements regarding means for obtaining a diploma in tuberculous diseases. The regulations governing the award of the diploma of T.D.D. by the University of Wales prescribe that every candidate must have obtained a registrable qualification in medicine, surgery and midwifery for at least two years before he can be admitted to the examination. He must have held, for not less than twelve months, a resident medical or surgical appointment on the staff of a tuberculosis hospital or sanatorium, or at an orthopædic institution providing not less than one hundred beds for cases of surgical tuberculosis, or shall satisfy the Faculty of Medicine that he has pursued a special study of tuberculosis equivalent to the above for a period of not less than twelve months. Every candidate must have pursued a course of instruction in the epidemiology, pathology and bacteriology of tuberculosis extending over one term in the Welsh National School of Medicine, or an equivalent course of instruction extending over at least the same period in an institution approved by the University for this purpose. The examination is held annually in the first week of June. Notice of candidature, together with the entrance fee of £10 10s and the necessary certificates, must be forwarded to the Registrar of the University, University Registry, Cathays Park, Cardiff, not later than May 1. The University of Wales offers a Cecil Prosser Research Scholarship, of the value of £250 for one year, triennially for research in tuberculosis. Part-time Assistantships in the Tuberculosis Institutes of the Welsh National Memorial Association are granted to selected post-graduates, as advertised from time to time in the medical press, and medical men and women are thus enabled to work for the Diploma while holding paid appointments.

The recently revised edition of the "Pharmacopœia of the Hospital for Sick Children, Great Ormond Street, London, W.C. 1," edited by J. Wicliffe Peck, Ph.C., F.C.S., Pharmaceutist to the Hospital (price 3s. 6d.), is a dainty, effectively arranged little volume, with prescriptions alphabetically arranged, printed on good thin paper, with blank page interleaved for additional notes. The collection of formulæ is excellent. In addition, much valuable information is presented in concise form regarding practical matters relating to the care of children and for the guidance of nurses and others responsible for their treatment and general well-being. It will be well that a copy of this valuable little work should be in the hands of every medical practitioner and all nurses dealing with sick children in hospitals, sanatoria, or elsewhere.

Dr. J. Greenwood Wilson has prepared an instructive and timely booklet on diphtheria immunization, which we commend to the notice of all medical advisers.[1] It is a valuable contribution to popular education, and should hasten the extension of immunization against diphtheria.

[1] "Diphtheria Immunization Propaganda and Counter-Propaganda." By J. Greenwood Wilson, M.D., M.R.C.P., D.P.H. With Preface by Jordan Forbes, M.D., M.R.C.P., D.P.H. Pp. 117. Dewsbury: Joseph Ward and Co., Church Street. 1933. Price 2s. 6d.